

# SCAG<sup>®</sup>

## POWER EQUIPMENT

# *OPERATOR'S MANUAL*



## Turf Tiger Dual Fuel

Model: STT61V-29KB-DF

Congratulations on owning a Scag mower! This manual contains the operating instructions and safety information for your Scag mower. Reading this manual can provide you with assistance in maintenance and adjustment procedures to keep your mower performing to maximum efficiency. The specific models that this book covers are listed on the inside cover. Before operating your machine, please read all the information enclosed.



# WARNING

## **FAILURE TO FOLLOW SAFE OPERATING PRACTICES MAY RESULT IN SERIOUS INJURY OR DEATH.**

- Read this manual completely as well as other manuals that came with your mower.
- DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution.
- Under no circumstances should the machine be operated on slopes greater than 15 degrees. ALWAYS FOLLOW OSHA APPROVED OPERATION.
- DO NOT mow on wet grass. Wet grass reduces traction and steering control.
- Keep all shields in place, especially the grass discharge chute.
- Before performing any maintenance or service, stop the machine and remove the spark plug wire and ignition key.
- If a mechanism becomes clogged, stop the engine before cleaning.
- Keep hands, feet and clothing away from power-driven parts.
- Keep others off the mower (only one person at a time)

## **REMEMBER - YOUR MOWER IS ONLY AS SAFE AS THE OPERATOR!**

**HAZARD CONTROL AND ACCIDENT PREVENTION ARE DEPENDENT UPON THE AWARENESS, CONCERN, PRUDENCE, AND PROPER TRAINING OF THE PERSONNEL INVOLVED IN THE OPERATION, TRANSPORT, MAINTENANCE, AND STORAGE OF THE EQUIPMENT.**

**This manual covers the operating instructions and illustrated parts list for:**

**STT61V-29KB-DF**

**with a serial number of**

**E5800001 to E5899999**

**Always use the entire serial number listed on the serial number tag when referring to this product.**

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## GENERAL INFORMATION

### 1.1 INTRODUCTION

Your mower was built to the highest standards in the industry. However, the prolonged life and maximum efficiency of your mower depends on you following the operating, maintenance and adjustment instructions in this manual.

If additional information or service is needed, contact your Scag Power Equipment Dealer.

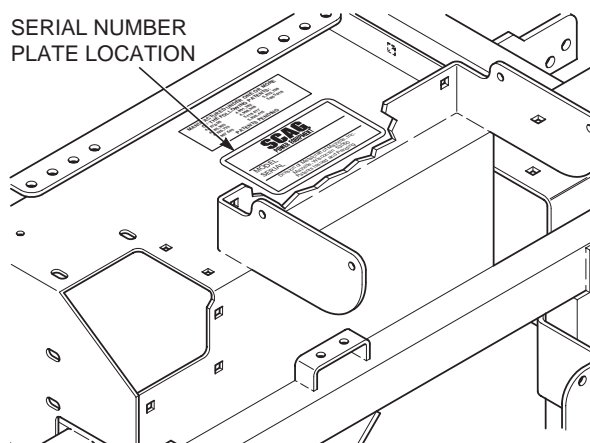
We encourage you to contact your dealer for repairs. All Scag dealers are informed of the latest methods to service this equipment and provide prompt and efficient service in the field or at their service shop. They carry a full line of Scag service parts.

**- IMPORTANT -**

***The replacement of any part on this product by other than the manufacturer's authorized replacement part may adversely affect the performance, durability or safety of this product.***

***Use of other than original Scag replacement parts will void the warranty.***

When ordering parts, always give the model and serial number of your mower. The serial number plate is located between the seat and the controls where shown in Figure 1-1.



**Figure 1-1. Mower Serial Number Plate Location**

**USE ONLY SCAG APPROVED ATTACHMENTS AND ACCESSORIES.**

Attachments and accessories manufactured by companies other than Scag Power Equipment are not approved for use on this machine. See Section 8-1.

**⚠ WARNING**

**For pictorial clarity, some illustrations and figures in this manual may show shields, guards or plates open or removed. Under no circumstances should your mower be operated without these devices in place.**

All information is based upon product information available at the time of approval for printing. Scag Power Equipment reserves the right to make changes at any time without notice and without incurring any obligation.












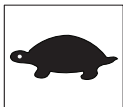




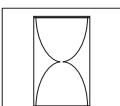

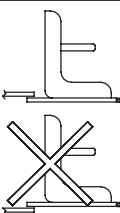



### 1.2 DIRECTION REFERENCE

The “Right” and “Left”, “Front” and “Rear” of the machine are referenced from the operator’s right and left when seated in the normal operating position and facing the forward travel direction.

### 1.3 SERVICING THE ENGINE AND DRIVE TRAIN COMPONENTS

The detail servicing and repair of the engine, hydraulic pumps and gearboxes are not covered in this manual; only routine maintenance and general service instructions are provided. For service of these components during the limited warranty period, it is important to contact your Scag dealer or find a local authorized servicing agent of the component manufacturer. Any unauthorized work done on these components during the warranty period may void your warranty.

### 1.4 SYMBOLS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	Choke		Transmission
	Parking Brake		Spinning Blade
	On/Start		Spring Tension on Idler
	Off/Stop		Oil
	Falling Hazard		Thrown Object Hazard
	Fast		Slow
	Continuously Variable - Linear		Cutting Element - Basic Symbol
	Pinch Point		Cutting Element - Engage
	Hour meter/Elapsed Operating Hours		Cutting Element - Disengage
	<b>STT MODELS</b> Seat must be installed under the seat hold down bracket during installation. Failure to secure the seat under the hold down bracket could result in serious injury or death in a roll over.		CE Mark
	Thrown Object Hazard Keep Bystanders Away		Read Operator's Manual

## SAFETY INFORMATION

### 2.1 INTRODUCTION

Your mower is only as safe as the operator. Carelessness or operator error may result in serious bodily injury or death. Hazard control and accident prevention are dependent upon the awareness, concern, prudence, and proper training of the personnel involved in the operation, transport, maintenance and storage of the equipment. Make sure every operator is properly trained and thoroughly familiar with all of the controls before operating the mower. The owner/user can prevent and is responsible for accidents or injuries occurring to themselves, other people or property.

#### READ THIS OPERATOR'S MANUAL BEFORE ATTEMPTING TO START YOUR MOWER.

A replacement manual is available from your authorized Scag Service Dealer or by contacting Scag Power Equipment, Service Department at P.O. Box 152, Mayville, WI 53050 or contact us via the Internet at [www.scag.com](http://www.scag.com). The manual for this machine can be downloaded by using the model and serial number or use the contact form to make your request. Please indicate the complete model and serial number of your Scag product when requesting replacement manuals.

### 2.2 SIGNAL WORDS



This symbol means "**Attention! Become Alert! Your Safety is Involved!**" The symbol is used with the following signal words to attract your attention to safety messages found on the decals on the machine and throughout this manual. The message that follows the symbol contains important information about safety. To avoid injury and possible death, carefully read the message! Be sure to fully understand the causes of possible injury or death.

#### SIGNAL WORD:

It is a distinctive word found on the safety decals on the machine and throughout this manual that alerts the viewer to the existence and relative degree of the hazard.

### DANGER

The signal word "DANGER" denotes that an extremely hazardous situation exists on or near the machine that could result in high probability of death or irreparable injury if proper precautions are not taken.

### WARNING

The signal word "WARNING" denotes that a hazard exists on or near the machine that can result in injury or death if proper precautions are not taken.

### CAUTION

The signal word "CAUTION" is a reminder of safety practices on or near the machine that could result in personal injury if proper precautions are not taken.

Your safety and the safety of others depends significantly upon your knowledge and understanding of all correct operating practices and procedures of this machine.

### 2.3 BEFORE OPERATION CONSIDERATIONS

1. NEVER allow children to operate this riding mower. Do not allow adults to operate this machine without proper instructions.
2. Do not mow when children and/or others are present. Keep children out of the mowing area and in the watchful care of a responsible adult other than the operator. Be alert and turn machine off if a child enters the area.
3. DO NOT allow children to ride or play on the machine, it is not a toy.
4. Clear the area to be mowed of objects that could be picked up and thrown by the cutter blades.
5. DO NOT carry passengers.
6. DO NOT operate the machine under the influence of alcohol or drugs.

7. If the operator(s) or mechanic(s) cannot read English or Spanish, it is the owner's responsibility to explain this material to them.
8. DO NOT wear loose fitting clothing. Loose clothing, jewelry or long hair could get tangled in moving parts. Do not operate the machine wearing shorts; always wear adequate protective clothing including long pants. Wearing safety glasses, safety shoes and a helmet is advisable and is required by some local ordinances and insurance regulations.

### **WARNING**

**Always wear hearing protection. Operating this machine over prolonged periods of time can cause loss of hearing.**

9. Keep the machine and attachments in good operating condition. Keep all shields and safety devices in place. If a shield, safety device or decal is defective or damaged, repair or replace it before operating the machine.

### **WARNING**

**This machine is equipped with an interlock system intended to protect the operator and others from injury. This is accomplished by preventing the engine from starting unless the deck drive is disengaged, the parking brake is on, the steering control levers are in the neutral position and the operator is in the seat. The system shuts off the engine if the operator leaves the seat with the deck drive engaged and/or the steering control levers are not in the neutral position and the parking brake is not engaged. Never operate equipment with the interlock system disconnected or malfunctioning.**

10. Be sure the interlock switches are functioning correctly.
11. Fuel is flammable; handle it with care. Fill the fuel tank outdoors. Never fill it indoors. Use a funnel or spout to prevent spillage. Clean up any spillage before starting the engine.

12. DO NOT add fuel to a running or hot engine. Allow the engine to cool for several minutes before adding fuel. Never fuel indoors or inside enclosed trailers.
13. Keep flammable objects (cigarettes, matches, etc.), open flames and sparks away from the fuel tank and fuel container. Use only approved containers.
14. Equipment must comply with the latest requirements per SAE J137 and/or ANSI/ASAE S279 when driven on public roads.

#### **- NOTE -**

*If the mower is driven on public roads, it must comply with state and local ordinances as well as SAE J137 and/or ANSI/ASAE S279 requirements. Contact your local authorities for regulations and equipment requirements.*

15. Do not operate without the side discharge chute installed and in the down position or with an optional grass catcher or mulch plate completely installed.
16. Check the blade mounting bolts at frequent intervals for proper tightness.
17. Make sure all hydraulic fluid connections are tight and all hydraulic hoses and lines are in good condition before starting the machine.

### **2.4 OPERATION CONSIDERATIONS**

1. Know the function of all controls and how to stop quickly.

### **WARNING**

**DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution. Under no circumstances should the machine be operated on slopes greater than 15 degrees. ALWAYS FOLLOW OSHA APPROVED OPERATION.**

2. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing directions on slopes.



**Section 2**

3. To prevent tipping or loss of control, start and stop smoothly, avoid unnecessary turns and travel at reduced speed.
4. When using any attachment, never direct the discharge of material toward bystanders or allow anyone near the machine while in operation.
5. Before attempting to start the engine, with the operator in the seat, disengage power to the cutter deck, place the steering control levers in the neutral position and engage the parking brake.
6. If the mower discharge ever plugs, shut off the engine, remove the ignition key, and wait for all movement to stop before removing the obstruction.

15. The machine and attachments should be stopped and inspected for damage after striking a foreign object, and damage should be repaired before restarting and operating the machine.


**CAUTION**

**Do not touch the engine or the muffler while the engine is running or immediately after stopping. These areas may be hot enough to cause a burn.**


**WARNING**

**DO NOT use your hand to dislodge the clogged discharge chute. Use a stick or other device to remove clogged material after the engine has stopped running and the blades have stopped turning.**


**DANGER**

**DO NOT run the engine inside a building or a confined area without proper ventilation. Exhaust fumes are hazardous and contain carbon monoxide which can cause brain injury and death.**

7. Be alert for holes, rocks, roots and other hidden hazards in the terrain. Keep away from any drop-offs. Beware of overhead obstructions (low limbs, etc.), underground obstacles (sprinklers, pipes, tree roots, etc.). Cautiously enter a new area. Be alert for hidden hazards.
8. Disengage power to cutter deck before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower. If you must mow in reverse, maintain a constant lookout to the rear of the machine and mow slowly.
9. DO NOT turn sharply. Use care when backing up.
10. Disengage power to cutter deck before crossing roads, walks or gravel drives.
11. Mow only in daylight or good artificial light.
12. NEVER raise the deck with the blades engaged.
13. Take all possible precautions when leaving the machine unattended, such as disengaging the mower, lowering the attachments, setting the parking brake, stopping the engine, and removing the key.
14. Disengage power to the attachments when transporting or when not in use.
16. Keep hands and feet away from cutter blades and moving parts. Contact can injure.
17. Transport the mower using a heavy duty trailer or truck. Insure the trailer or truck has all of the necessary lighting and markings as required by laws, codes, and ordinances. Secure a trailer with a safety chain.
18. Be cautious when loading and unloading onto trailers or trucks. Use only a full width ramp. Ramp angle should be no more than 15 degrees. Back up the ramp and drive down forward.
19. When transporting the mower, make sure the park brake is engaged, the steering control levers are in the neutral position, the engine is off with the key removed, and the wheels have been blocked.
20. Tie the mower down securely using straps, chains, cable, or ropes. Both front and rear straps must be directed down and outward from machine.
21. Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.
22. NEVER leave the machine running unattended.

### 2.5 ROLL-OVER PROTECTION SYSTEM

#### **WARNING**

Reduce speed when turning, operating on slopes, slick or wet surfaces. Allow extra distance to stop.

Stay off of slopes too steep for safe operation. To check a slope, attempt to back up it (with the cutter deck down). If the machine can not back up the slope without the wheels slipping, do not operate the machine on this slope. Under no circumstances should the machine be operated on slopes greater than 15 degrees.

**DO NOT** mow near drop-offs, ditches or embankments. The machine could suddenly roll over if a wheel goes over the edge or if the edge caves in.

Operate the machine smoothly, no sudden turns, starts or stops on a slope.

**NEVER** tow on slopes. The weight of the towed equipment may cause loss of traction and loss of control.

**DO NOT** permit untrained personnel to operate the machine.

Be cautious when loading and unloading onto trailers or trucks.

Use only a full width ramp.

Ramp angle should be no more than 15 degrees.

Back up the ramp and drive down forward.

This mower has been designed for good traction and stability under normal mowing conditions. However, caution must be used when traveling on slopes, especially when the grass is wet. Do not mow on wet grass. Wet grass reduces traction and steering control.

Any or all parts of the Roll-Over Protection System **MUST NOT** be removed. Failure to adhere to this guideline could result in injury or death.

### FOLDABLE ROLL-OVER PROTECTION SYSTEM

#### **WARNING**

Keep the roll bar in the raised and locked position and the seat belt securely fastened during operation. Failure to do so could cause serious injury or loss of life.

Lower the roll bar only when absolutely necessary.

#### **WARNING**

There is no roll-over protection when the roll bar is in the down position.

Lower the roll bar only when absolutely necessary.

Raise the roll bar as soon as clearance permits.

**DO NOT** wear the seat belt when the roll bar is in the down position.

**ALWAYS** wear seat belt when roll bar is in the up position.

Operate the machine smoothly, no sudden turns, starts or stops.

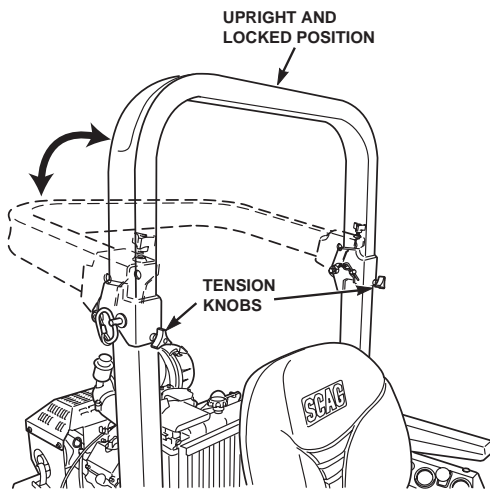
Check the area carefully before mowing for proper overhead clearance (i.e. branches, doorways, etc.).

**DO NOT** contact any overhead object with the roll bar.

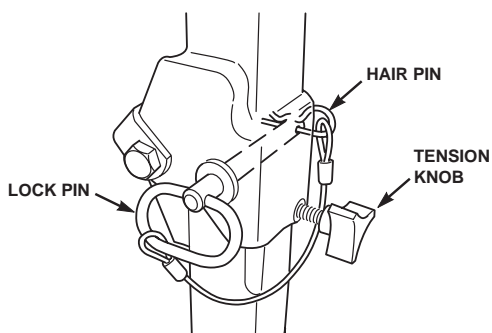
1. To lower the roll bar, loosen the tension knob on both the left hand and right hand bar. See Figure 2-1.

## Section 2

2. Remove the hairpin cotter pins and remove the two (2) lock pins. See Figure 2-2.
3. Lower the roll bar to the down position.
4. To raise the roll bar, lift the bar to the upright position.
5. Install the two (2) lock pins through the hole, secure with the two (2) hairpin cotter pins and tighten the tension knobs. See Figure 2-2. Remove the seat belt from the retainer brackets.



**Figure 2-1. Foldable Roll-Over Protection System**



**Figure 2-2. ROPS Hinge**

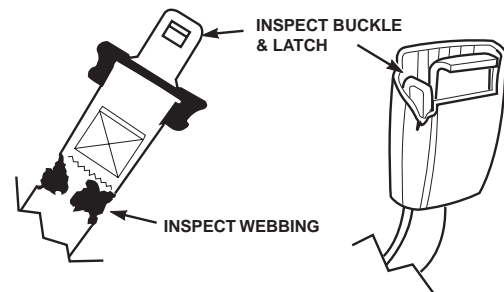
The potential exposure of the seat belt to severe environmental conditions make it crucial to inspect the seat belt system regularly.

It is recommended that the seat belt be inspected on a daily basis for signs of damage. Any seat belt system that shows cuts, fraying, extreme or unusual wear, significant discoloration due to UV exposure, dirt or stiffness, abrasion to the seat belt webbing, or damage to the buckle, latch plate, hardware or any other obvious problem should be replaced immediately.

## **WARNING**

**Failure to properly inspect and maintain the seat belt can cause serious injury or loss of life.**

1. Check the full length of the seat belt webbing for cuts, wear, fraying, dirt and stiffness. See Figure 2-3.
2. Check the seat belt webbing in areas exposed to ultra violet rays from the sun or extreme dust or dirt. If the original color of the webbing in these areas is extremely faded and/or is packed with dirt, the physical strength of this webbing may have deteriorated. If this condition exists, replace the seat belt system.
3. Check the buckle and latch for proper operation and determine if the latch plate is excessively worn, deformed, or if the buckle is damaged or cracked. See Figure 2-3.



**Figure 2-3. Seat Belt Inspection**

### 2.6 MAINTENANCE CONSIDERATIONS & STORAGE

1. Never make adjustments to the machine with the engine running unless specifically instructed to do so. If the engine is running, keep hands, feet, and clothing away from moving parts.
2. Disengage drives, lower implement, set parking brake, stop engine and remove key or disconnect spark plug wire to prevent accidental starting of the engine when servicing or adjusting the machine. Wait for all movement to stop before adjusting, cleaning or repairing.
3. Disconnect battery or remove spark plug wire before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect the positive first and the negative last.
4. Keep all nuts, bolts and screws tight, to ensure the machine is in safe working condition. Check blade mounting bolts frequently to be sure they are tight.
5. Do not change the engine governor settings or overspeed the engine. See the engine operator's manual for information on engine settings.
6. To reduce fire hazard, keep the cutting units, drives, muffler and engine free of grass, leaves, excessive grease, oil and dirt.
7. Park the machine on level ground and engage the parking brake.
8. NEVER allow untrained personnel to service the machine.
9. Use care when checking blades. Use a Blade Buddy, wrap the blade(s) or wear gloves and USE CAUTION when servicing blades. Only replace blades. NEVER straighten or weld blades.
10. Keep all parts in good working condition. Replace all worn or damaged decals.
11. Use jack stands to support components when required.
12. Carefully release pressure from components with stored energy.

### WARNING

**Hydraulic fluid is under high pressure. Keep body and hands away from pinholes or nozzles that eject hydraulic fluid under high pressure. If you need service on your hydraulic system, please see your authorized Scag dealer. If hydraulic fluid is injected into the skin, it must be surgically removed within a few hours by a doctor or gangrene may result.**

13. Let the engine cool before storing.
14. DO NOT store the machine near an open flame.
15. Shut off fuel while storing or transporting.
16. DO NOT store fuel near flames or drain indoors.
17. Charge batteries in an open, well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.

### 2.7 USING A SPARK ARRESTOR

The engine in this machine is not equipped with a spark arrestor muffler. It is in violation of California Public Resource Code Section 4442 to use or operate this engine on or near any forest covered, brush covered or grass covered land unless the exhaust system is equipped with a spark arrestor meeting any applicable local or state laws. Other states or federal areas may have similar laws. Check with your state or local authorities for regulations pertaining to these requirements.

## Section 2

### 2.8 SAFETY AND INSTRUCTIONAL DECALS

**WARNING**

The seat **MUST** be installed under the seat hold down bracket during installation. Failure to secure the seat under the hold down bracket could result in serious injury or death in a rollover.

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**WARNING**

**INSTALL BELT COVER BEFORE OPERATING MACHINE**

READ OPERATOR'S MANUAL

483402

**DANGER**

**SPINNING BLADES**

**KEEP CLEAR**

**BLADE CONTACT & THROWN OBJECTS CAN INJURE**

483407

**WARNING**

**SERIOUS INJURY OR DEATH MAY RESULT FROM MACHINE ROLLOVER**

483300

**FORWARD**

**F**

**REVERSE**

**R**

481568

**WARNING**

**ROTATING BLADES AND BELTS**

- Keep hands, feet & clothing clear
- Keep all guards in place
- Shut off engine & disengage blade clutch before servicing
- Use caution in directing discharge
- Read instruction manual before operating

**DO NOT OPERATE UNLESS GRASS CATCHER, MULCHING KIT OR DISCHARGE CHUTE IS INSTALLED**

483406

Failure to follow these instructions could result in serious injury or death.

Do not operate machine on steep slopes or near drop offs.

Avoid sharp and/or quick turns.

Do not exceed the machine weight rating of the ROPS.

Always use seat belt.

Do not jump if machine tips.

If ROPS is foldable, always keep ROPS fully extended.

WHEN ROPS MUST BE DOWN, do not use the seat belt.

Drive with extra care if equipped with seat platform.

Do not operate machine without seat platform pin in place.

286304500

483300

**IMPORTANT**

Operation on slopes can be hazardous.

This machine was originally equipped with a Rollover Protection Device with a Roll Bar and Seat Belt.

See your dealer if either is missing or damaged.

483425

**START/DRIVE PROCEDURE**

- Engage parking brake
- Disengage mower deck drive
- Move control handles to neutral lock position
- Start engine
- Release parking brake
- Select forward or reverse with hydro control handles

**WARNING**

**AVOID SERIOUS INJURY OR DEATH**

- Read the Operator's Manual
- Solicite etiquetas en español a un distribuidor Scag
- Operate only on slopes you can back up and never on slopes greater than 15 degrees
- If machine stops going uphill, stop blades and back down slowly
- Avoid sudden turns
- Do not mow when children or others are around
- Never carry children even with blades off
- Look down and behind before and while backing
- Keep safety devices (guards, shields, switches, etc.) in place and working
- Remove objects that could be thrown by the blades
- Trained operators only

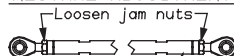
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**IMPORTANT ADJUSTMENT PROCEDURES**

READ OPERATOR'S MANUAL FOR MORE DETAILS

Check tire pressure - (Drive tires-12 psi, Caster tires-25 psi)

NEUTRAL ADJUSTMENT



Loosen jam nuts

Rotate turnbuckle

With an operator in the seat, engine running, control levers in neutral and the parking brake disengaged - adjust control linkage. Loosen jam nuts. If wheel rotates forward, adjust turnbuckle CCW. If wheel rotates rearward, adjust turnbuckle CW. Adjust until drive wheel stops turning. Tighten jam nuts. Repeat for opposite side.

TRACKING ADJUSTMENT

If the machine pulls to the right, adjust LH control linkage CCW to slow left wheel. If the machine pulls to the left, adjust RH control linkage CCW to slow right wheel. Readjust neutral if necessary.

FREE WHEEL OPERATION

To move machine without running the engine, rotate both dump valves located at the LH side of the pumps CCW 1/2 turn to "freewheel" positions. Return dump valves to original position to operate the mower. Tighten to 7-10 ft-lbs.

HYDRAULIC FLUID LEVEL

Check hydraulic fluid level while fluid is cool. Fluid level should be 3" below top of filler neck. Fill with SAE 20W50 motor oil only.

Gearbox Lubricant:  
SAE 80W90 gear oil

**IMPORTANT**

Do not overfill. Room for hot fluid expansion must be allowed or resulting expansion may cause leaks in the system.

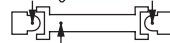
482710

482710

**IMPORTANT**

**DRIVESHAFT MAINTAINANCE**

Grease yokes 3-4 pumps  
Every 200 hours



Grease spline 8-10 pumps  
Every 50 hours

**WARNING**

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrester may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

483900

(supplied with California models only)

**CAUTION**

Avoid injury from burns. Shut off engine before removing fuel tank cap.

483397

**WARNING**

Replace seat only with Scag approved seat with seat mounting provisions and Scag approved seat belts.

Failure to follow these directions could result in injury or death in the event of a rollover.

483633

### SPECIFICATIONS

#### 3.1 ENGINE

General Type ..... Heavy Duty Industrial/Commercial Gas/LP  
 Brand ..... Kubota Dual Fuel [Spec. #DF972-E2]  
 Model ..... Kubota DF972  
 Horsepower ..... LP =29 HP at 3600 RPM, Gas = 31 HP at 3600 RPM  
 Type ..... 4 Cycle Dual Fuel, 3 Cylinder, Horizontal Shaft, Water Cooled  
 Displacement ..... 0.962L (58.7 cu.in.).  
 Cylinders ..... 3 with Cast-Iron Sleeves  
 Governor ..... Mechanical Type with Variable Speed Control Set At 3600 RPM  
 Idle Speed ..... 1500 RPM  
 Fuel Injection ..... Injection Pump, Bosch MD Mini Type  
 Fuel ..... Gasoline with a minimum octane rating of 87 and Commercial Propane  
 Oil Pump Group ..... Positive Displacement Gerotor™ Oil Pump with Oil Filter  
 Starter ..... Electric Starting with Solenoid Shift Starter  
 Belts ..... Kevlar cord. Self-adjusting, Self-tightening  
     Deck Drive Belt ..... Scag Part Number - 481460  
     Pump Drive Belt ..... Scag Part Number - 483086

#### 3.2 ELECTRICAL

Battery ..... 12 Volt, Maintenance Free (525 CCA)  
 Charging System ..... Alternator  
 Charging Output ..... 12 Volt, 40 Amp  
 System Polarity ..... Negative Ground  
 Starter ..... 12 Volt Electric Ring Gear Type, Key and Solenoid Operated Interlock  
 Switches ..... Seat, Neutral Control, Mower Engagement (BBC), Parking Brake  
 Instrument Panel ..... Volt Meter, Key Switch, Throttle Lever, BBC Switch, Temperature Gauge,  
     Fuses, Safety Start Module, Oil Pressure Gauge, Glow Plug Indicator  
 Fuses ..... Two (1) 20 Amp, (1) 50 Amp Resettable

#### 3.3 POWER HEAD

Drive System ..... Hydraulic Drive with Two Variable Displacement Pumps and Two Cast-Iron High-Torque Motors  
 Hydrostatic Pumps ..... Two Hydro-Gear™ BDP 16 cc/rev. Pumps with Dump Valves for  
     movement without running the engine and pressure relief valves  
 Drive Wheel Motors ..... Two Hydro-Gear Model HGM-18E 18 cu. inch Cast-Iron High-Torque Motors  
 Steering/Travel Control ..... Twin Lever Fingertip Steering Control with  
     Individual Control to Each Wheel with Gas Spring Dampers  
 Parking Brake ..... Lever Actuated Linkage to Brakes on Both Drive Wheel Axles  
 Wheels:  
     (2) Front Caster ..... 13 X 6.00 Flat-Free Semi-Pneumatic  
     (2) Drive ..... 24X12.0X12 Four-Ply Pneumatic Tubeless, Radius Edge  
 Tire Pressure:  
     Front Caster ..... Flat Free  
     Drive ..... 12 PSI  
 Fuel Tank ..... 10-Gallon Seamless Polyethylene Tank with large opening and Fuel Gauge Fill Cap  
 Seat ..... Padded, Suspension Seat  
 Travel Speed:  
     Forward ..... 0-12 MPH  
     Reverse ..... 0-6 MPH  
 -NOTE- The machine will travel at 12mph for transport purposes. For best cutting performance the forward travel  
 speed should be adjusted depending upon the cutting conditions.

## Section 3

### 3.4 CUTTER DECK

Type .....	Floating, Adjustable, Anti-scalping, Hybrid Design Combines Out-front and Belly-mount Designs
Construction .....	10-Gauge steel reinforced with 7-gauge (3/16") Support Plate. 7-gauge (3/16") deck skirt.
True Cutting Width .....	61" (155.0 cm)
Cutting Height Adjustment.....	Foot Operated Lever Adjustment from Operator's Seat, 1.00" to 6.00" in 1/4" increments
Cutter Blades.....	0.197 Thick, Milled Edge, Wear Resistant Marbain™
61V .....	Three (3) 21" blades
Blade Engagement.....	Electric Blade Engagement Clutch with Control Panel Switch Connected to the Cutter Deck Gearbox through a Drive Shaft.
Discharge Opening.....	Extra Wide 18.5" Discharge Opening with Spring Loaded Discharge Chute
Discharge Chute.....	Black, Polypropylene (Plastic), Flexible
Spindles.....	Heavy-Duty 1-1/8" Top Dimension Spindle Shaft, Cast Housing, Taper Roller Bearing, Low Maintenance with Top Access Grease Fitting and Grease Overfill Relief Poppet
Spindle Pulleys.....	Split Steel with Easily Removed Taper Hubs
Cutter Deck Belts.....	B-section with Kevlar Cord. Self-adjusting, Self-tightening
61V .....	Scag Part Number - 481558
Electric Clutch Type .....	Ogura Electric Clutch
Drive Shaft.....	Clamp Yoke Shaft With Two High Speed U-Joints

### 3.5 HYDRAULIC SYSTEM

Hydraulic Oil Filter .....	10 Micron Spin-on Element Type
Hydraulic Reservoir .....	Nylon; 3 Quart Capacity

### 3.6 WEIGHTS AND DIMENSIONS

Length.....	87.5"
Tracking Width .....	55"
Overall Width w/chute down .....	73.5"
Overall Width w/chute up.....	62"
Overall Height w/ROPS up .....	67.5"
Overall Height w/ROPS down.....	56.5"
Operating Weight.....	1540#

### 3.7 PRODUCTIVITY

Cutting Width .....	61"
Acres Per Day.....	23.7

The preceding chart will aid you in determining how many acres your Scag mower will cut per day. The chart is an estimate based on 8 hours per day cutting time at 6 MPH with an allowance for overlap and turns.

### OPERATING INSTRUCTIONS

#### CAUTION

Do not attempt to operate this mower unless you have read this manual. Learn the location and purpose of all controls and instruments before you operate this mower.

#### 4.1 CONTROLS AND INSTRUMENT IDENTIFICATION

Before operating the mower, familiarize yourself with all mower and engine controls. Knowing the location, function and operation of these controls is important for safe and efficient operation of the mower.

1. **Ignition Switch (Figure 4-1).** The ignition switch is used to start the engine and has three positions; OFF, ON, and START.

2. **Mower Deck Switch (Figure 4-1).** Used to engage and disengage the mower drive system. Pulling up on the switch will engage the deck drive. Pushing down on the switch will disengage the deck drive.
3. **Engine Choke Control (Figure 4-1).** Used to start a cold engine.
4. **Engine Throttle Control (Figure 4-1).** Used to control the engine speed. Pushing the lever forward increases engine speed. Pulling the lever back decreases engine speed. Full back position is the IDLE position. Full forward is the cutting position.
5. **Voltmeter (Figure 4-1).** Indicates the condition of the charging system. When the engine is running, in normal operating conditions, the needle should be in the 12 to 14 volt range.

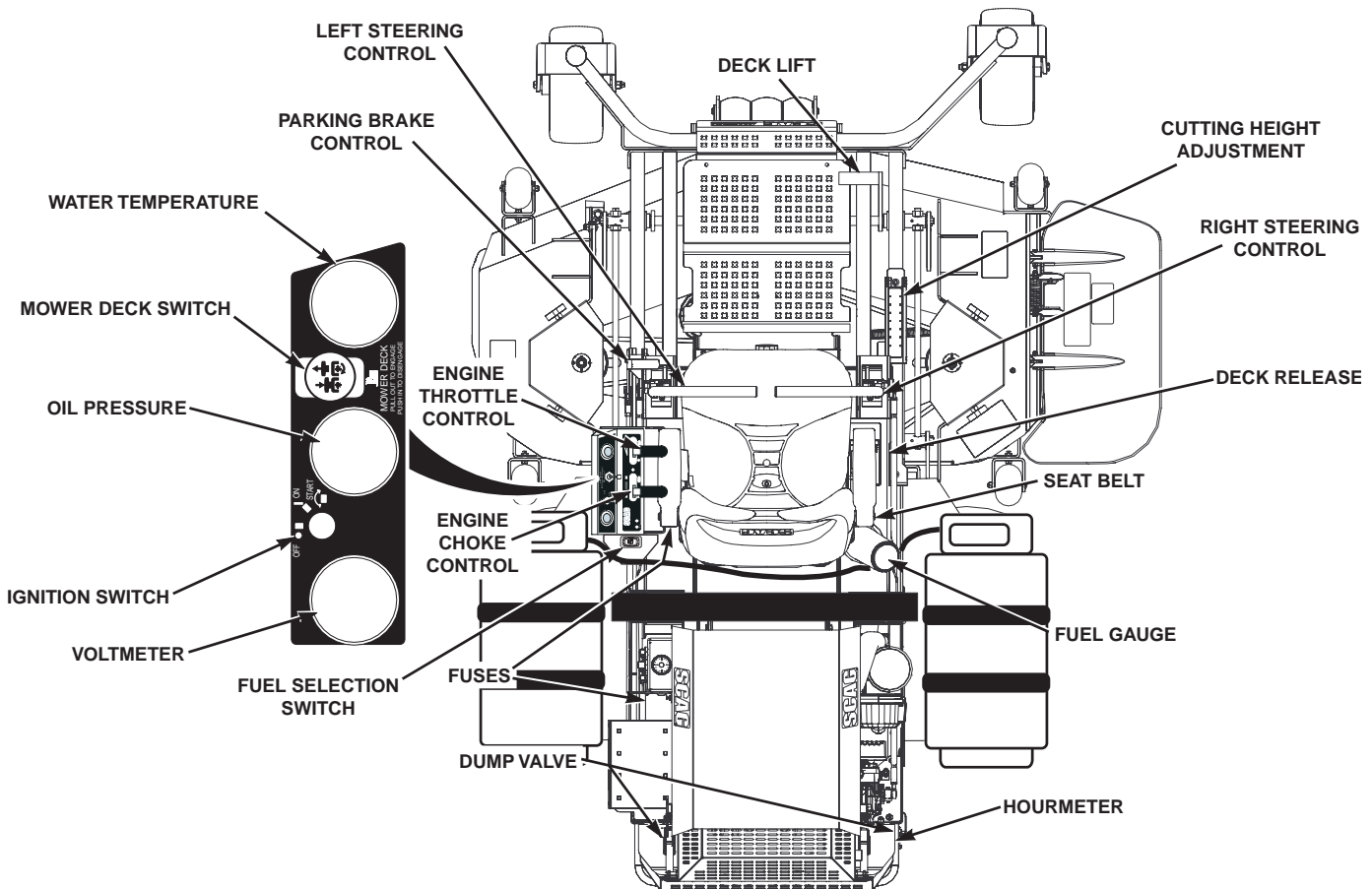
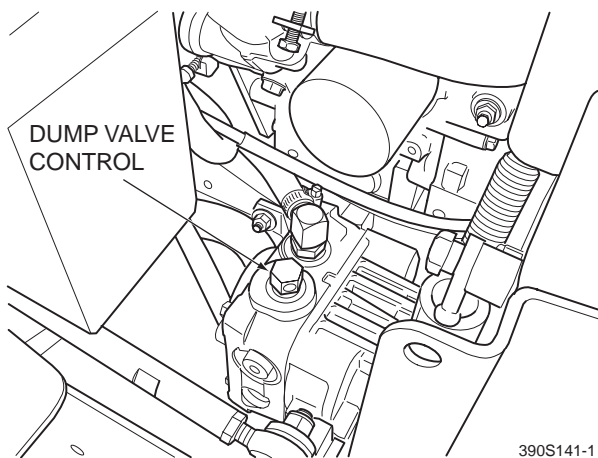


Figure 4-1. Controls and Instruments



## Section 4

6. **Hourmeter (Figure 4-1).** Indicates the number of hours the engine has been operated. It only operates when the engine is running. Has preset maintenance reminders for engine and hydraulic system oil changes. Will start flashing scheduled maintenance 2 hours before preset time and continue flashing until 2 hours after. Automatically resets.
7. **Fuse Holders (Figure 4-1).** There is one 20 amp fuse and one 50 amp resettable fuse that protect the mower's electrical system. To replace fuses, pull fuse out of the socket and install a new fuse.
8. **Left Steering Control (Figure 4-1).** Used to control the mower's left wheel when traveling forward or reverse.
9. **Right Steering Control (Figure 4-1).** Used to control the mower's right wheel when traveling forward or reverse.
10. **Parking Brake Control (Figure 4-1).** Used to engage and disengage the parking brakes. Pull the lever back to engage the parking brakes. Push the lever forward to disengage the parking brakes.
11. **Fuel Tank Gauge (Figure 4-1).** Indicates the amount of fuel in the fuel tank.
12. **Dump Valve Control Levers (Figure 4-2).** Located on the hydraulic pumps, used to "free-wheel" the mower. Rotating the levers clockwise until they stop allows the unit to move under hydraulic power. The levers must be in this position and torqued to 10 lb-ft during operation of the mower. Rotating the levers counter-clockwise allows the mower to be moved by hand (free-wheeling).
14. **Cutting Height Adjustment (Figure 4-1).** Used to set the cutter deck at the desired cutting height.
15. **Deck Release Lever (Figure 4-1).** Used to lock the cutter deck in the transport position. Push the foot pedal forward and pull back on the release lever to release the cutter deck for normal mowing.
16. **Temperature Gauge (Figure 4-1).** Indicates the operating temperature of the engine. Used on mowers with the liquid-cooled engine only.
17. **Check Engine Light (Figure 4-1).** Indicates the operation of the engine sensors on the Kawasaki Digital Fuel Injection (DFI). Light will flash once at initial start up. If a problem occurs with a sensor on the engine, the light will flash a code. See your authorized Scag Dealer for diagnosis and repair.
18. **Seat Belt (Figure 4-1).** Used to secure the operator. Seat belt must be worn at all times when the ROPS is in the upright and locked position.
19. **Seat Hold Down Release Latch (Figure 4-1).** Located behind the seat. Used to secure the seat in the operator's position. Release the latch to gain access under the seat.
20. **Fuel Selection Switch (Figure 4-1).** Used to select the type of fuel the engine will operate on. Selection can be made for either Gasoline or LP.



**Figure 4-2. Dump Valve Control**

13. **Deck Lift Foot Lever (Figure 4-1).** Used to raise and lower the cutter deck. Push full forward to lock in the transport position.

### 4.2 SAFETY INTERLOCK SYSTEM

The mower is equipped with a safety interlock system that prevents the engine from starting unless the deck drive is disengaged, the parking brake is engaged, the steering control levers are in the neutral position and the operator is in the seat. The interlock system shuts off the engine if the operator leaves the seat with the steering control levers not in the neutral position and/or the cutter blades engaged and the parking brake not engaged.

## WARNING

**Never operate the mower with the interlock system disconnected or malfunctioning. Do not disengage or bypass any switch; injury to yourself and others or property damage could result.**

### 4.3 INITIAL RUN-IN PROCEDURES

#### FIRST DAY OF USE OR APPROXIMATELY 20 HOURS

1. Check all belts for proper alignment and wear at 2, 4 and 8 hours.
2. Change the engine oil and oil filter after the first 20 hours of operation. (See Section 7.4.)
3. Check hydraulic oil level in reservoir. (See Section 7.3.)
4. Check for loose hardware. Tighten as needed.
5. Check interlock system for proper operation. (See Section 4.2.)
6. Check tire pressure. Adjust pressure if necessary. (See Section 7.10.)

### 4.4 STARTING THE ENGINE

#### CAUTION

**DO NOT USE STARTING FLUIDS. Use of starting fluids in the air intake system may be potentially explosive or cause a “runaway” engine condition that could result in engine damage and/or personal injury.**

1. Select the fuel type, either Gasoline or LP. For gasoline, be sure the fuel shutoff valve, located behind the operator's seat, is fully open. (See Section 7.5.) For LP, make sure the fuel valve is completely open on the LP tank.
2. Secure the ROPS in the upright and locked position.
3. Sit in the operator's seat, fasten seat belt and place the steering control levers in the neutral position.
4. Engage the parking brake.
5. Place the PTO switch in the disengaged position.
6. If the engine is cold, choke the engine as needed.
7. Move the engine throttle control to about half engine speed.
8. Turn the ignition key to the START position and release the key as soon as the engine starts. Do not hold the key in the START position for more than 15 seconds at a time. Allow at least 60 seconds between each cranking attempt to prevent

overheating of the starter motor. Prolonged cranking can damage the starter motor and shorten battery life.

9. Allow engine to warm before operating the mower.

### 4.5 GROUND TRAVEL AND STEERING

#### **- IMPORTANT -**

*If you are not familiar with the operation of a machine with lever steering and/or hydrostatic transmissions, the steering and ground speed operations should be learned and practiced in an open area, away from buildings, fences, or obstructions.*

*Learn the operation on flat ground before operating on slopes.*

*Start practicing with a slow engine speed and slow forward travel.*

*Learn to feather the steering controls to obtain a smooth operating action.*

*Practice operating the mower until you are comfortable with the controls before proceeding to mow.*

### FORWARD TRAVEL

To travel forward with the mower, disengage the parking brake, pull levers inward out of the neutral lock position and slowly push the steering control levers forward an equal distance. The further the steering control levers are pushed forward the greater the forward speed will be. To increase the speed, push the steering control levers further forward and to decrease the speed, pull the steering control levers back.

To stop the forward travel, pull the steering control levers back to the neutral position.

To steer the mower left while traveling forward, pull the left steering lever back. The further the lever is pulled back, the quicker the mower will turn left.

To steer the mower right while traveling forward, pull the right steering control lever back. The further the lever is pulled back, the quicker the mower will turn right.

## Section 4

**- NOTE -**

Smooth operation of the steering levers will produce smooth mower operation. While learning the operation of the steering controls, keep the travel speed low.

**- IMPORTANT -**

Do not travel forward over a curb. The mower will hang up on the curb. Raise the deck and travel backwards over the curb at a 45 degree angle. (See Section 4.1, items 13 - 15, on page 14 for cutter deck raising descriptions.)

### REVERSE TRAVEL

**⚠ CAUTION**

Disengage power to the mower before backing up. Do not mow in reverse unless absolutely necessary and then only after observation of the entire area behind the mower.

**⚠ CAUTION**

Before backing up, observe the rear for persons and obstructions. Clear the area before backing up. Possible injury or property damage could occur.

To travel in reverse, pull levers inward out of the neutral lock position and pull both handles back. Keep the travel speed low while traveling in reverse.

**- NOTE -**

The mower may not travel straight in reverse. Slight adjustments may need to be made using the steering controls.

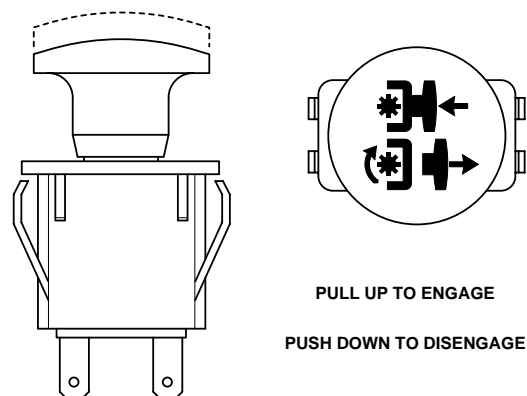
To steer left while traveling in reverse, allow the left steering control lever to move forward. The further the control is allowed to move forward, the quicker the mower will turn left.

To steer right while traveling in reverse, allow the right steering control lever to move forward. The further the control is allowed to move forward, the quicker the mower will turn right.

To stop the reverse travel, allow the steering control levers to return to the neutral position. If the mower is to be parked, place the handles in the neutral lock position and engage the parking brake.

### 4.6 ENGAGING THE DECK DRIVE (CUTTER BLADES)

1. Set the throttle at about 3/4 speed. Do not attempt to engage the deck drive at high speed as this shortens the electric clutch life — use only moderate engine speed when engaging the deck drive.
2. Engage the deck drive by pulling up on the yellow switch, located on the instrument panel, to the engage position. See Figure 4-3.



PULL UP TO ENGAGE  
PUSH DOWN TO DISENGAGE

390S0138

**Figure 4-3. Cutter Engage Switch**

**- NOTE -**

A squealing noise may be heard when engaging or disengaging the deck drive. It is caused by the electric clutch plates meshing as the mower comes up to speed. This is normal.

3. To disengage the deck drive, push the switch in to the disengage position.
4. Always operate the engine at full throttle to properly maintain cutting speed. If the engine starts to lug down, reduce the forward speed and allow the engine to operate at maximum RPM.

### 4.7 HILLSIDE OPERATION

#### **WARNING**

**DO NOT operate on steep slopes. To check a slope, attempt to back up it (with the cutter deck down). If the machine can back up the slope without the wheels slipping, reduce speed and use extreme caution. Under no circumstances should the machine be operated on slopes greater than 15 degrees. ALWAYS FOLLOW OSHA APPROVED OPERATION.**

1. This mower has been designed for good traction and stability under normal mowing conditions. However, caution must be used when traveling on slopes, especially when the grass is wet. Wet grass reduces traction and steering control. The Roll-Over Protection System is standard equipment for this machine. See Section 2.5, page 6 of this manual for further details.
2. To prevent tipping or loss of control, do not start or stop suddenly, avoid unnecessary turns and travel at reduced speed. If tires lose traction, disengage blades and proceed slowly off the slope.
3. Avoid sudden starts when mowing uphill. Sudden starts may cause the machine to tip backwards.
4. Loss of traction may occur when traveling down hill. Weight transfers to the front of the machine and may cause the drive wheels to slip causing loss of braking or steering.
5. Keep tires properly inflated.

### 4.8 PARKING THE MOWER

1. Park the machine on a flat, level surface only. Do not park the machine on an incline.
2. Place the steering control levers in the neutral position.
3. Disengage the cutter blades.
4. Slow the engine to idle speed.
5. Engage the parking brake.
6. Turn the ignition key to the OFF position and remove the key.

### 4.9 AFTER OPERATION

1. Wash the entire mower after each use. Do not use high pressure spray or direct the spray onto electrical components.

**- IMPORTANT -**

*Do not wash a hot or running engine. Cold water will damage the engine. Use compressed air to clean the engine if it is hot.*

2. Keep the entire mower clean to inhibit serious heat damage to the engine or hydraulic oil circuit.
3. Check the drive belts for proper alignment and any signs of wear. Correct and adjust if necessary.

#### **DANGER**

**To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.**

4. After the mower has cooled down, fill the fuel tank with fresh, clean fuel at the end of every day of operation. See Engine Owner's Manual for proper octane requirements.
5. Check the tire pressure. Adjust pressure if necessary.

### 4.10 REMOVING CLOGGED MATERIAL

#### **DANGER**

##### **ROTATING BLADES**

**NEVER PUT YOUR HANDS INTO THE DISCHARGE CHUTE FOR ANY REASON!**

**Shut off the engine and remove the key and only then use a stick or similar object to remove material if clogging has occurred.**

1. If the discharge chute becomes clogged, shut off the engine and remove the ignition key. Using a stick or similar item, dislodge the clogged material. Then resume normal mowing.

## Section 4

### 4.11 MOVING MOWER WITH ENGINE STOPPED

To “free-wheel” or move the mower around without the engine running, rotate the dump valve levers counter-clockwise. See Figure 4-4. Disengage the parking brake and move the mower by hand. When the machine is in the desired position, engage the parking brake and rotate the levers clockwise until they stop. The dump valve levers must be returned to the DRIVE position and torqued to 10 lb-ft to drive the mower.

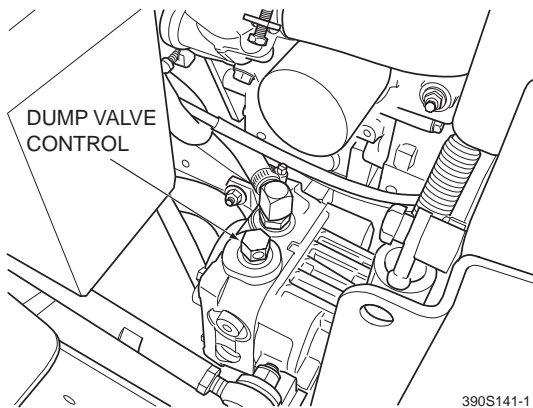


Figure 4-4. Dump Valve Control

### 4.12 RECOMMENDATIONS FOR MOWING

1. Do not mow with dull blades. A dull blade will tear grass, resulting in poor lawn appearance and reduced mowing power.

## **! WARNING**

**DO NOT operate without Discharge Chute, Mulching Kit, or entire Grass Catcher properly installed.**

2. The discharge chute must not be removed and must be kept in the lowest position to deflect grass clippings and thrown objects downward. Direct the side discharge away from sidewalks or streets to minimize cleanup of clippings. When mowing close to obstacles, direct the discharge away from the obstacles to reduce the chance of property damage by thrown objects.
3. Cut grass when it is dry and not too tall. Do not cut grass too short (cut off 1/3 or less of existing grass for best appearance). Mow frequently.

4. Keep mower and discharge chute clean.
5. When mowing wet or tall grass, mow the grass twice. Raise the mower to the highest setting for the first pass and then make a second pass to the desired height.
6. Use a slow travel speed for trimming purposes.
7. Operate the engine at full throttle for best cutting. Mowing with a lower RPM causes the mower to tear the grass. The engine is designed to be operated at full speed.
8. Use the alternate stripe pattern for best lawn appearance. Vary the direction of the stripe each time the grass is mowed to avoid wear patterns in the grass.

### 4.13 ADJUSTING CUTTING HEIGHT

The mower deck can be adjusted from a height of 1.0 inch to 6.0 inches at 1/4-inch intervals. To adjust the cutting height:

## **! WARNING**

**DO NOT adjust the cutting height with the mower blades rotating. Disengage the power to the cutter blades and then adjust cutting height.**

1. Disengage the power to the cutter blades.
2. Push the cutting height adjustment foot pedal all the way forward using your right foot until it locks in place. See Figure 4-5.

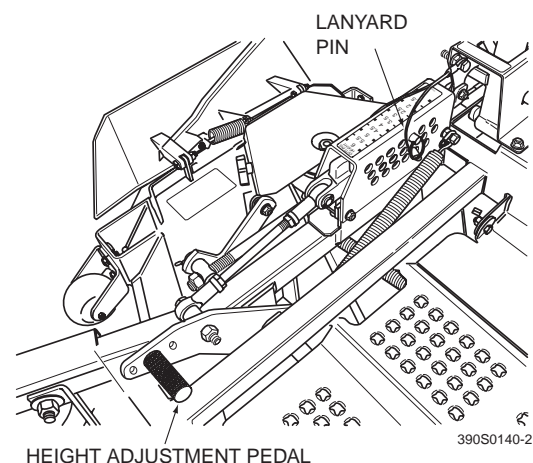
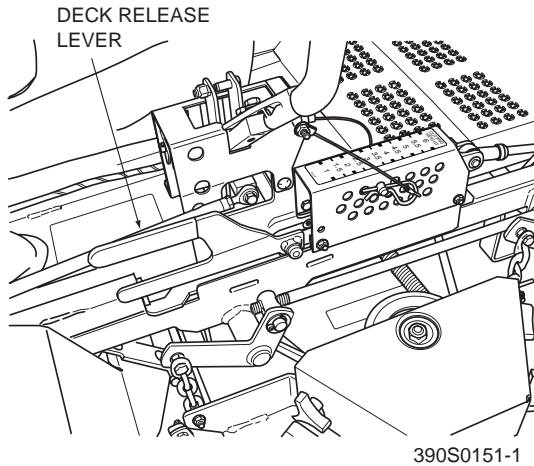


Figure 4-5. Adjusting Cutting Height

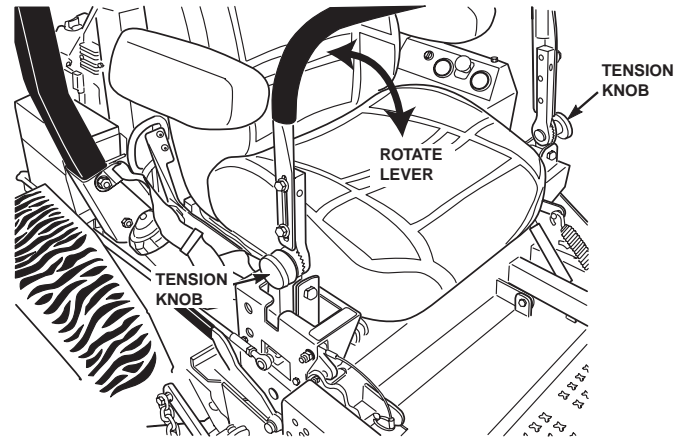
3. Insert the lanyard pin into the cutting height index at the desired cutting height. Push forward on the deck lift foot lever, hold in place and pull back on the deck release lever. See Figure 4-6. Slowly release the foot pedal. A deck height decal is located on the cutting height index as an aid in adjusting the deck to the desired height. See Figure 4-5.



**Figure 4-6. Deck Release Lever**

### 4.14 ADJUSTING THE STEERING LEVERS

1. Position the seat to the desired location.
2. While in the operator's position without the engine running, move both steering levers forward and reverse to check for full function control and comfort.
3. If adjustment of the steering levers is needed, use the following instructions to adjust.
  - A. Loosen the tension knob on the lever assembly.
  - B. Rotate the steering lever forward or backward to achieve the optimum operating position.
  - C. Tighten the tension knob and repeat on the opposite side.
  - D. While in the operator's position, bring the steering levers out of the neutral lock position and check to make sure both levers are even before operating.

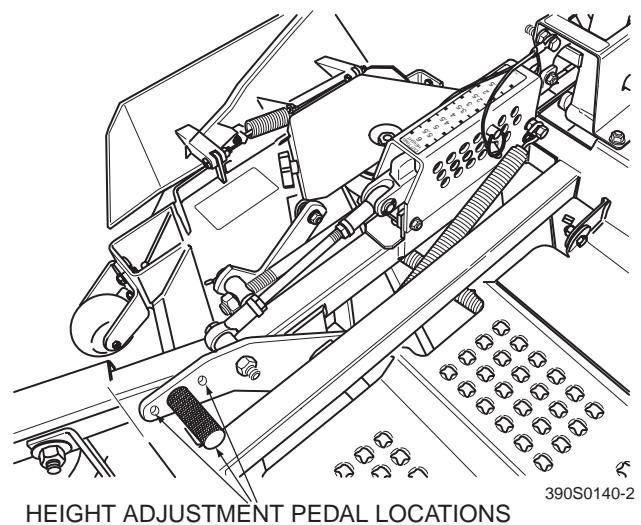


**Figure 4-7. Adjusting Steering Levers**

4. The control handle can also be adjusted in two different positions. If necessary, remove the two bolts securing the control handle to the control lever. Install the handle in the desired position.

### 4.15 ADJUSTING THE HEIGHT ADJUST PEDAL

1. Position the seat to the desired location.
2. While in the operator's position with out the engine running, push down on the height adjust pedal to check for full function control.
3. The height adjust pedal can be located in three (3) different positions for operator comfort and control. See Figure 4-8.



**Figure 4-8. Height Adjust Pedal Locations**

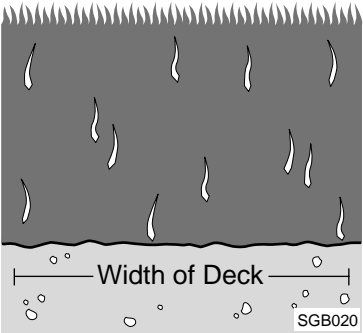
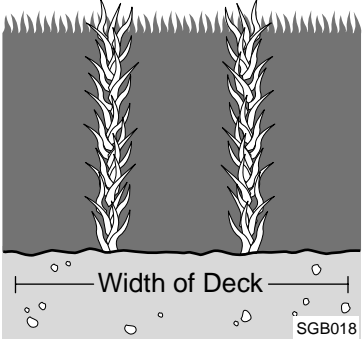
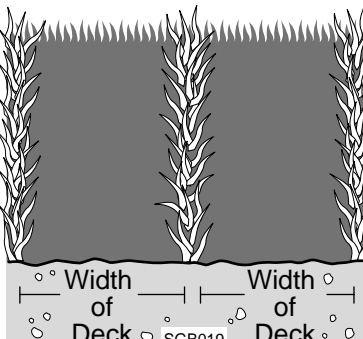
## Section 4

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### 4.16 TOWING (OPTIONAL HITCH ACCESSORY)

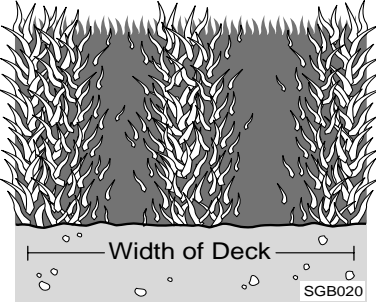
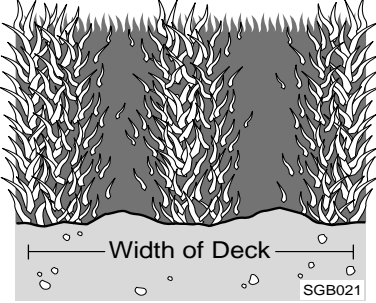
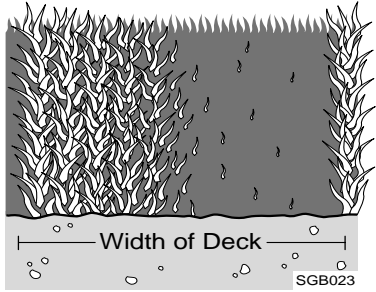
1. NEVER allow children or others in or on towed equipment.
2. Tow only with a machine that has a hitch designed for towing. Do not attach towed equipment except at the hitch point.
3. Follow manufacturer's recommendations for weight limit for towed equipment. 250 lbs. maximum towing weight.
4. NEVER tow on slopes. The weight of the towed equipment may cause loss of traction and loss of control.
5. Travel slowly and allow extra distance to stop.
6. Zero-turning with a trailer attached could cause damage to the trailer or mower.

## TROUBLESHOOTING CUTTING CONDITIONS

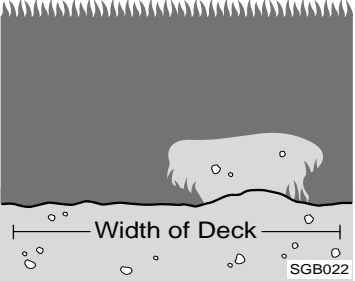
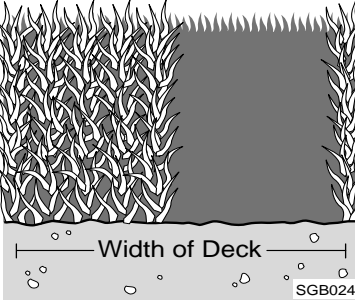
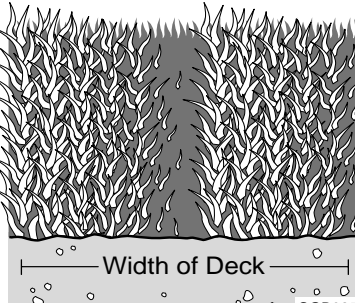
CONDITION	CAUSE	CURE
<p><b>STRINGERS - OCCASIONAL BLADES OF UNCUT GRASS</b></p> 	Low engine RPM	Run engine at full RPM
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
	Dull blades, incorrect sharpening	Sharpen blades
	Deck plugged, grass accumulation	Clean underside of deck
	Belts slipping	Adjust belt tension
<p><b>STREAKING - STRIPS OF UNCUT GRASS IN CUTTING PATH</b></p> 	Dull, worn blades	Sharpen blades
	Incorrect blade sharpening	Sharpen blades
	Low engine RPM	Run engine at full RPM
	Belt slipping	Adjust belt tension
	Deck plugged, grass accumulation	Clean underside of deck
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
	Bent blades	Replace blades
<p><b>STREAKING - STRIPS OF UNCUT GRASS BETWEEN CUTTING PATHS</b></p> 	Not enough overlapping between rows	Increase the overlap of each pass



**TROUBLESHOOTING CUTTING CONDITIONS (CONT'D)**

CONDITION	CAUSE	CURE
<p><b>UNEVEN CUT ON FLAT GROUND - WAVY HIGH-LOW APPEARANCE, SCALLOPED CUT, OR ROUGH CONTOUR</b></p>  <p style="text-align: right; font-size: small;">SGB020</p>	Lift worn from blade	Replace blade
	Blade upside down	Mount with cutting edge toward ground
	Deck plugged, grass accumulation	Clean underside of deck
	Too much blade angle (deck pitch)	Adjust pitch and level
	Deck mounted improperly	See your authorized SCAG dealer
	Bent spindle area	See your authorized SCAG dealer
	Dull blade	Sharpen blade
<p><b>UNEVEN CUT ON UNEVEN GROUND-WAVY APPEARANCE, HIGH-LOW SCALLOPED CUT, OR ROUGH CONTOUR</b></p>  <p style="text-align: right; font-size: small;">SGB021</p>	Uneven ground	May need to reduce ground speed, raise cutting height, and/or change direction of cut
<p><b>SLOPING RIDGE ACROSS WIDTH OF CUTTING PATH</b></p>  <p style="text-align: right; font-size: small;">SGB023</p>	Tire pressures not equal	Check and adjust tire pressure
	Wheels uneven	Check and adjust tire pressure
	Deck mounted incorrectly	See your authorized SCAG dealer
	Deck not level side-to-side	Check for level and correct

### TROUBLESHOOTING CUTTING CONDITIONS (CONT'D)

CONDITION	CAUSE	CURE
<p><b>SCALPING - BLADES HITTING DIRT OR CUTTING VERY CLOSE TO THE GROUND</b></p>  <p>Width of Deck SGB022</p>	Low tire pressures	Check and adjust pressures
	Ground speed too fast	Slow speed to adjust for conditions
	Cutting too low	May need to reduce ground speed, raise cutting height, change direction of cut, and/or change pitch and level
	Rough terrain	May need to reduce ground speed, raise cutting height, and/or change direction of cut
	Ground speed too fast	Slow speed to adjust for conditions
	Wet grass	Cut grass after it has dried out
<p><b>STEP CUT - RIDGE IN CENTER OF CUTTING PATH</b></p>  <p>Width of Deck SGB024</p>	Blades not mounted evenly	Adjust pitch and level
	Bent blade	Replace blade
	Internal spindle failure	See your authorized SCAG dealer
	Mounting of spindle incorrect	See your authorized SCAG dealer
<p><b>SLOPE CUT - SLOPING RIDGES ACROSS WIDTH OF CUTTING PATH</b></p>  <p>Width of Deck SGB025</p>	Bent spindle mounting area	See your authorized SCAG dealer
	Internal spindle failure	See your authorized SCAG dealer
	Bent deck housing	See your authorized SCAG dealer

## ADJUSTMENTS

### 6.1 PARKING BRAKE ADJUSTMENT

#### WARNING

Do not operate the mower if the parking brake is not operable. Possible severe injury could result.

The parking brake linkage should be adjusted whenever the parking brake lever is placed in the "ENGAGE" position and the parking brake will allow the mower to move. If the following procedures do not allow you to engage the parking brake properly, contact your Scag dealer for further brake adjustments.

1. Position a floor jack under the rear of the machine. Raise the machine and support it to prevent it from falling. Block the caster wheels to prevent the machine from moving. Remove the drive wheels.
2. With the brake lever in the disengaged position, check the distance between the top of the frame tube and the bottom of the brake handle. The distance should be 2" to 2-1/4" (See Figure 6-1).
3. If the distance is not at the specified measurement, adjust by loosening the jam nuts at both ends of the brake control rod and turning the rod until the proper distance is achieved. (See Figure 6-1). Tighten the jam nuts.
4. With the brake in the engaged position, check the spring compression between the two flat washers on the LH side of the machine. The distance should be 1-7/16". (See Figure 6-2).
5. If the distance is not at the specified measurement, loosen the jam nut at the rod end side of the brake actuator rod. (See Figure 6-2).
6. Turn the adjustment bolt (clockwise to decrease the spring compression or counter clockwise to increase the spring compression) until the 1-7/16" measurement is achieved and tighten the jam nut. (See Figure 6-2).
7. Repeat steps 4 through 6 on the RH side of the machine.
8. Replace the drive wheels and test the brake.

#### - NOTE -

If this procedure does not achieve proper brake adjustment, please contact your authorized Scag dealer.

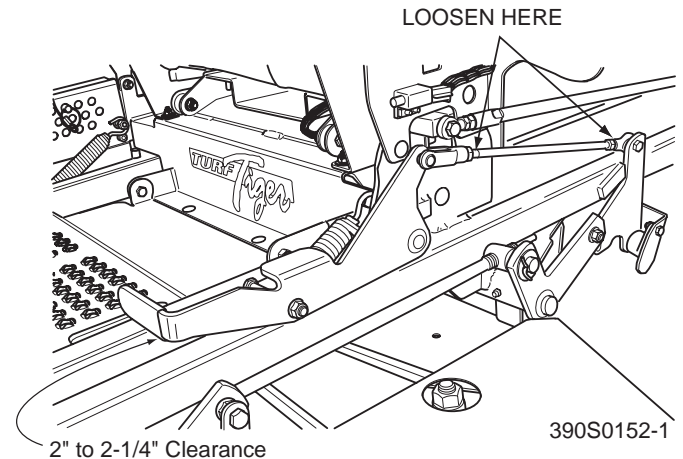


Figure 6-1. Brake Adjustment

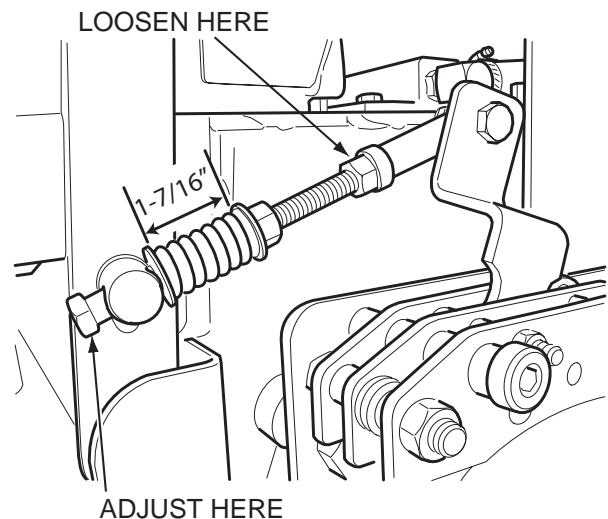


Figure 6-2. Brake Rod Adjustment

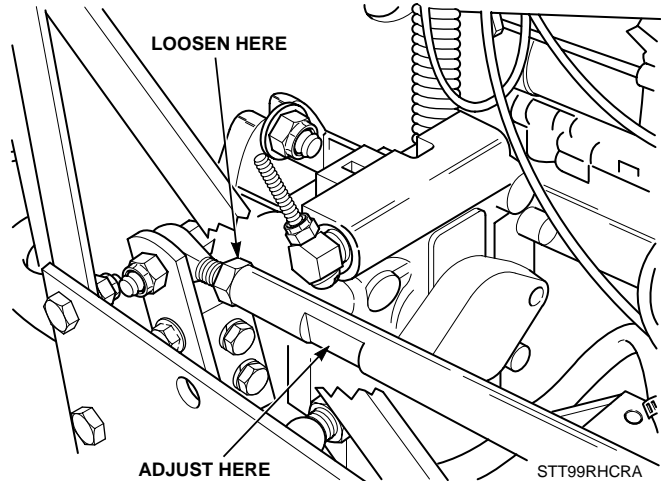
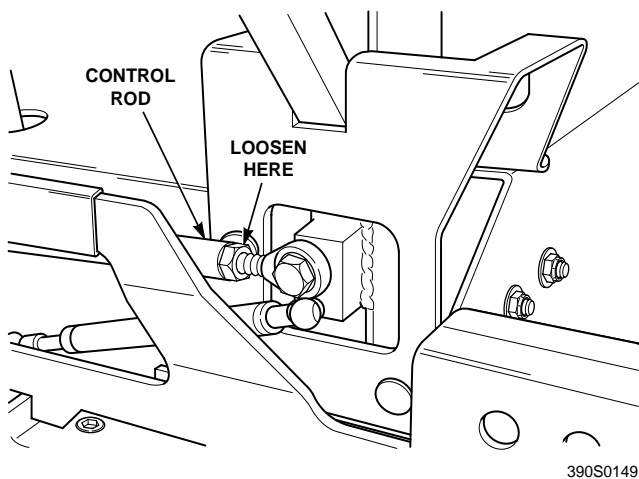
### 6.2 TRAVEL ADJUSTMENTS

Neutral or tracking adjustments will need to be made if:

- A. The steering control levers are in the neutral position and the machine creeps forward or backward. (Neutral Adjustment, See Below).
- B. The steering control levers are in the full forward position and the mower pulls to one side or the other when traveling in a forward direction. (Tracking Adjustment, See Page 25).

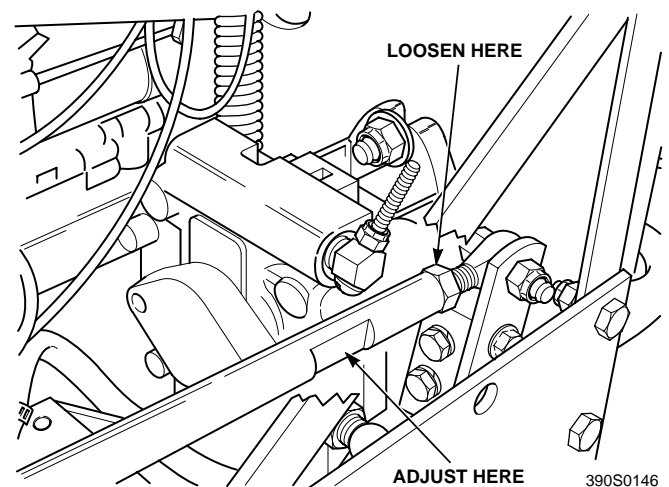
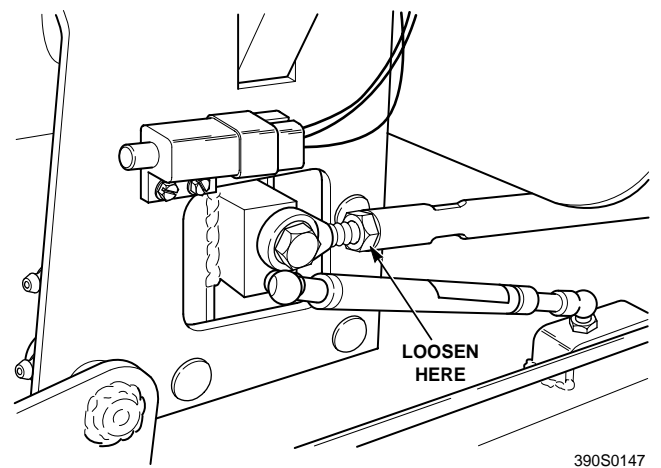
#### NEUTRAL ADJUSTMENT

1. Be sure the dump valve levers are in the run position and the steering control levers are in the neutral lock position.
2. With an operator in the seat, start the engine and disengage the parking brake.
3. Run the engine at full operating speed and check if the machine creeps forward or backwards.
4. Adjust the RH wheel by loosening the jam nuts on the steering control rod and turning the rod until the drive wheel turns in the forward direction. Turn the rod back until the drive wheel stops moving. Turn the rod an additional 1/2 turn. (See Figure 6-3).



**Figure 6-3. RH Steering Control Rod Adjustment**

5. Tighten the jam nuts and repeat for the LH wheel. (See Figure 6-4).



**Figure 6-4. LH Steering Control Rod Adjustment**

## Section 6

6. Actuate the steering control levers forward and reverse several times and return them to the neutral position.
7. Check that the drive wheels remained in neutral and readjust if necessary.
8. Check that the steering control levers hit the stop before the pumps reach full stroke. Adjust as needed.

### TRACKING ADJUSTMENT

#### CAUTION

Stop the engine and remove the key from the ignition before making any adjustments. Wait for all moving parts to come to a complete stop before beginning work.

#### CAUTION

The engine and drive unit can get hot during operation causing burn injuries. Allow engine and drive components to cool before making any adjustments.

#### - NOTE -

*Before proceeding with this adjustment, be sure that the caster wheels turn plus pivot freely and that the tire pressure in the drive wheels is correct. If the tire pressure is not correct, the machine will pull to the side with the lower pressure.*

1. If at full speed the mower pulls right, it is an indication that the left wheel is turning faster than the right wheel. To adjust this condition, proceed as follows:
  - A. Stop the machine and place the steering control levers in the neutral position. Loosen the lock nuts securing the ball joints at each end of the LH steering control rod. Rotate the control rod to lengthen the rod and tighten the lock nuts. This will cause the control rod to stroke the LH pump less, slowing down the LH wheel. (See Figure 6-4, page 24)

#### - NOTE -

*If after making the adjustment as outlined in step 1A, the machine creeps forward or backward, the neutral adjustment must be made as described on page 24.*

2. If at full speed the mower pulls left, it is an indication that the right wheel is turning faster than the left wheel. To adjust this condition, proceed as follows:

- A. Stop the machine and place the steering control levers in the neutral position. Loosen the lock nuts securing the ball joints at each end of the RH steering control rod. Rotate the control rod to lengthen the rod and tighten the lock nuts. This will cause the control rod to stroke the RH pump less, slowing down the RH wheel. (See Figure 6-3, page 24)

#### - NOTE -

*If after making the adjustment as outlined in step 2A, the machine creeps forward or backward, the neutral adjustment must be made as described on page 24.*

### 6.3 THROTTLE CONTROL AND CHOKE ADJUSTMENTS

These adjustments must be performed by your Scag dealer to ensure proper and efficient running of the engine. Should either need adjustment, contact your authorized Scag service center.

### 6.4 BELT ADJUSTMENT

#### WARNING

Before removing any guards, shut the engine off and remove the ignition key.

All drive belts and cutter deck belts are spring loaded and self-tensioning. The springs should be checked periodically for proper alignment and wear.

### 6.5 BELT ALIGNMENT

Belt alignment is important for proper performance of your Scag mower. If you experience frequent belt wear or breakage, see your authorized Scag service center for belt adjustment.

### 6.6 CUTTER DECK ADJUSTMENTS

Cutter deck level, pitch and height are set at the factory. However, if these adjustments should ever need to be made, the following procedures will aid in obtaining the proper cutter deck adjustment.

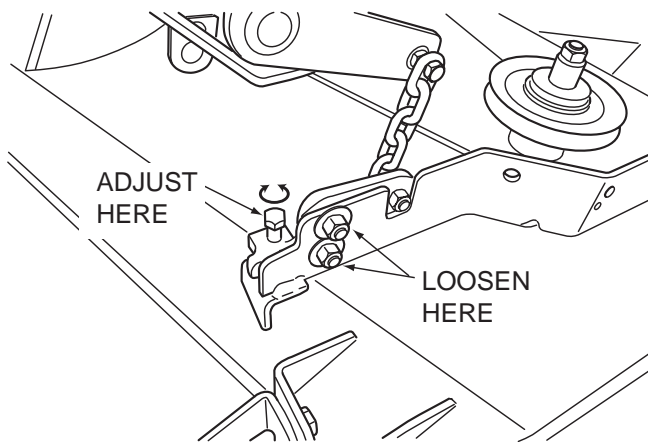
**- NOTE -**

*Before proceeding with the cutter deck adjustments, be sure that all tires are properly inflated.*

#### CUTTER DECK LEVEL

The cutter deck should be level from side-to-side for proper cutting performance. To check for level, be sure that the mower is on a flat, level surface, the tires are properly inflated and the cutter deck is set at the most common cutting height that you will use. On the RH side of the machine, check the distance from the bottom of the cutter deck to the floor. Next check the distance from the bottom of the cutter deck to the floor on the LH side of the machine. Both measurements should be the same. If the two measurements are different, the cutter deck level must be adjusted as follows:

1. On the front LH side of the cutter deck locate the cutter deck level adjusting bracket (See Figure 6.5)



**Figure 6-5. Cutter Deck Level Adjustment**

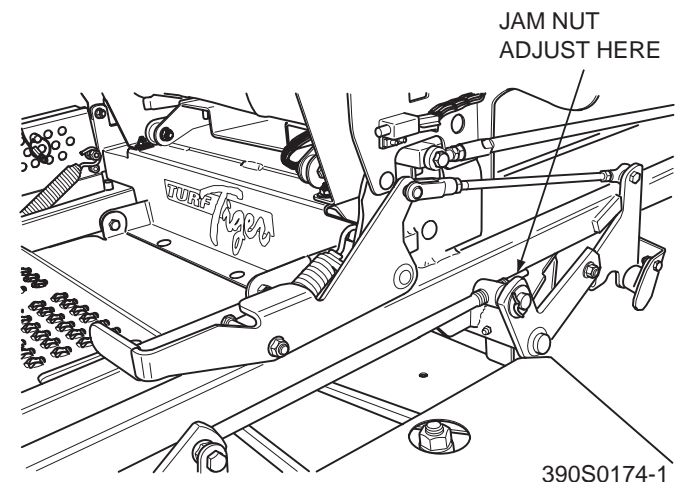
2. Loosen the two (2) elastic stop nuts. Adjust the bolt up or down on the adjustment bracket to adjust the cutter deck until the distance from the bottom of the cutter deck to the floor is the same as the measurement on the RH side of the machine.
3. Tighten the two elastic stop nuts to secure the cutter deck in the proper position.

#### CUTTER DECK PITCH

The pitch of the cutter deck should be equal between the front and rear of the cutter deck for proper cutting performance. To check for proper deck pitch, be sure that the mower is on a flat, level surface and the tires are properly inflated.

Check the distance from the bottom of the cutter deck to the floor at the rear RH side of the cutter deck directly behind the cutter deck hanging chains. Next check the distance from the bottom of the cutter deck to the floor at the front RH side of the cutter deck directly in front of the cutter deck hanging chains. The measurement at the front of the cutter deck should be equal to the measurement at the rear of the deck. Make these measurements at the LH side of the cutter deck also. If the measurement at the front of the deck is not equal, the cutter deck pitch must be adjusted as follows:

1. Loosen the jam nut on both adjusting rods. (See Figure 6.6)



**Figure 6-6. Cutter Deck Level Adjustment**

2. Using a wrench on the jam nut (See Figure 6.6) turn the adjusting rods until the proper pitch is obtained on both the RH and the LH side of the cutter deck. Tighten both jam nuts.

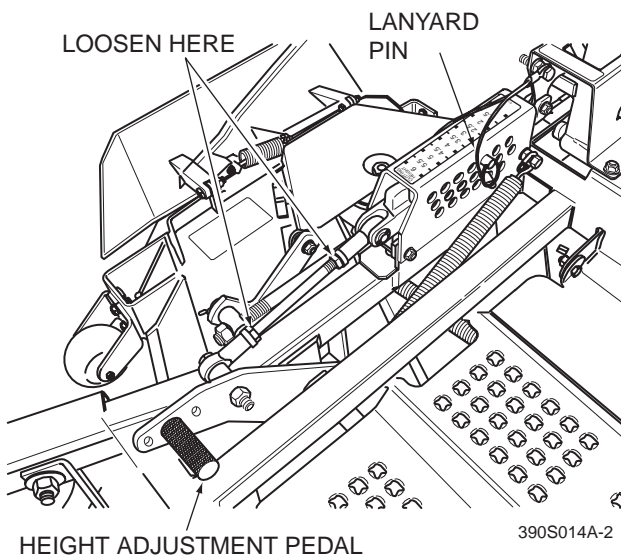
**- NOTE -**

To prevent the cutter deck from teetering, all four (4) cutter deck hanging chains must have tension on them. If all four chains do not have tension on them and the deck teeters, you must readjust the cutter deck as outlined in the procedures above.

**CUTTER DECK HEIGHT**

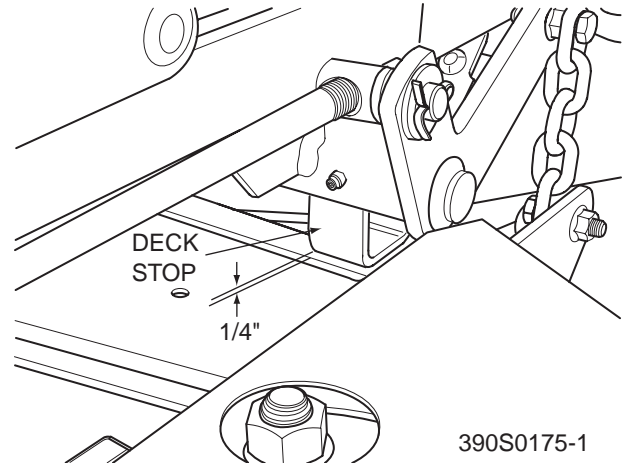
The cutter deck height adjustment is made to ensure that the cutter deck is cutting at the height indicated on the cutting height index gauge. To check for proper deck height, be sure that the mower is on a flat, level surface and the tires are properly inflated.

1. Place the cutter deck in the transport position. Loosen the jam nuts on both ends of the deck height control rod. (See Figure 6.7)



**Figure 6-7. Cutter Deck Height Adjustment**

2. Turn the control rod (See Figure 6.7) until there is a 1/4" space between the rear deck stop and the top of the cutter deck. (See Figure 6.8). Tighten the jam nuts on the control rod.



**Figure 6-8. Cutter Deck Stop**

3. Check the cutter deck cutting height by placing the lanyard pin in the 3" position on the cutting height index. Release the deck from the transport position and allow the deck to move to the 3" cutting height position.
4. Check the measurement from the floor to the cutter blade tip. If the measurement is not at 3", an adjustment can be made using the deck height control rod. (See Figure 6.7)

**- NOTE -**

If an adjustment had to be made, be sure that the cutter deck can easily be locked into the transport position.

### CUSTOM-CUT BAFFLE ADJUSTMENT

The Custom-Cut Baffle is designed to deliver optimum airflow and superior cutting performance in any type of grass. The Custom-Cut Baffle can be raised or lowered to precisely tailor the deck's performance for the type of grass being cut. The baffle can be set in seven (7) different positions for optimum performance.

- A. 3-1/2" or 3-3/4" Position - (See Figure 6-9). For very tall, wiry or tough-to-cut grass.
- B. 4" (factory setting), 4-1/4" or 4-1/2" Position - (See Figure 6-9). For general purpose cutting. This gives the best mix of cutting performance in all types of grass.
- C. 4-3/4" or 5-1/4" Position - (See Figure 6-9). Placing the baffle in either the 4-3/4" or 5-1/4" setting will enhance fall cutting (leaf pickup) and reduce cutter deck "blowout".

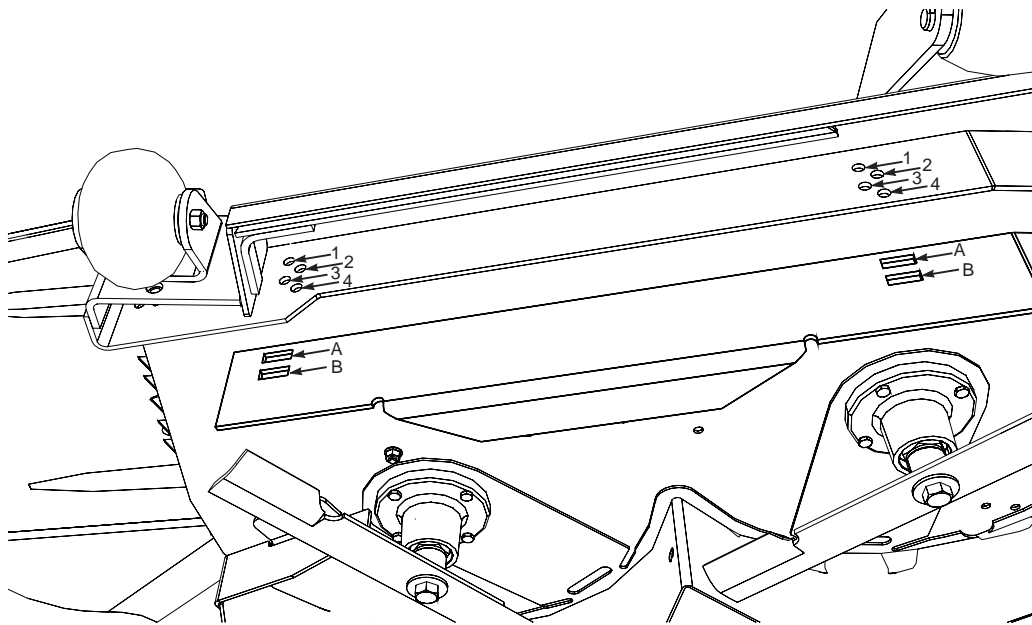
To adjust the Custom-Cut Baffle height:

1. Place the cutter deck in the transport position.
2. Remove the hardware securing the Custom-Cut Baffle to the cutter deck.

**- NOTE -**

*Hardware location used in the illustrations are for reference only. Location of hardware may vary depending on cutter deck size.*

3. Move the Custom-Cut Baffle to desired position. (See Figures 6-9).
4. Reinstall the mounting hardware. Torque hardware to 39 ft-lbs.



**Custom-Cut Baffle Adjustment**

Mounting Slot Selected	Mounting Hardware Location			
Slot "A" Height (inches)	Hole 1 3-3/4"	Hole 2 4-1/4"	Hole 3 4-3/4"	Hole 4 5-1/4"
Slot "B" Height (inches)		Hole 2 3-1/2"	Hole 3 4"	Hole 4 4-1/2"

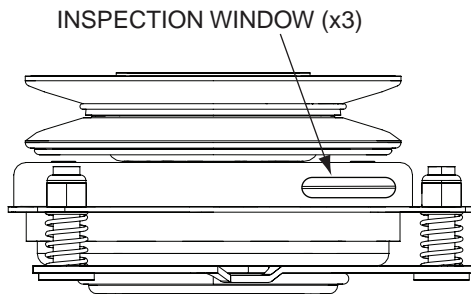
**Figure 6-9. Custom-Cut Baffle Adjustment**



## 6.7 ELECTRIC CLUTCH ADJUSTMENT

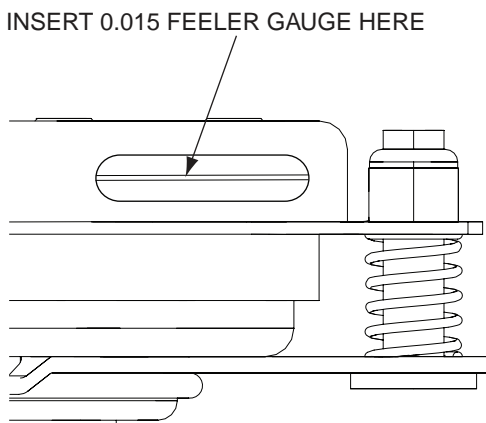
The electric clutch serves two functions in the operation of the mower. In addition to starting and stopping the power flow to the cutter blades, the clutch also acts as a brake to assist in stopping blade rotation when the PTO is switched off or the operator presence circuit is interrupted.

When the clutch is disengaged, the air gap between the armature and rotor must be adjusted to fifteen thousandths of an inch, 0.015, for proper operation. The airgap adjustment is made at three bolts on the clutch. There are three inspection windows, one next to each adjusting bolt. See Figure 6-10.



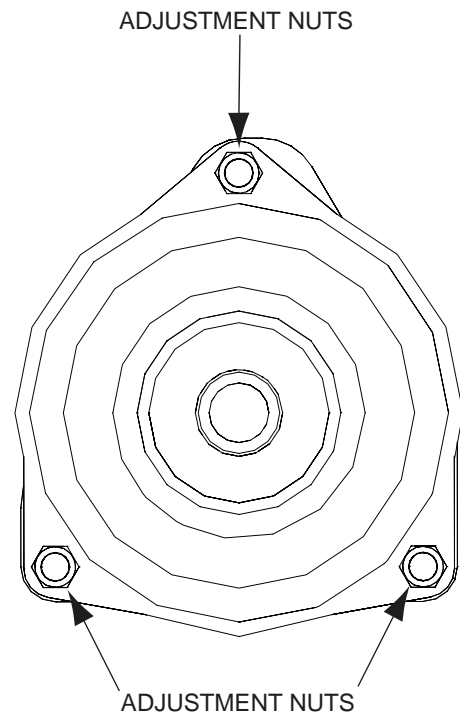
**Figure 6-10. Clutch Air Gap Adjustment**

1. Locate the inspection windows on the clutch.
2. Place a 0.015 feeler gauge in the slot between the rotor and the armature. See Figure 6-11.



**Figure 6-11. Clutch Air Gap Adjustment**

3. Tighten or loosen the adjusting bolt as needed to achieve the 0.015 inch airgap. See Figure 6-12. Perform this operation at all three inspection windows.



**Figure 6-12. Clutch Air Gap Adjustment**

This adjustment should be done every 500 hours of operation or annually, whichever comes first. In cases where the machine is heavily used, airgap settings should be checked more often.

If the air gap is too narrow, the clutch armature may drag when disengaged, resulting in premature failure.

If the air gap is too wide, the clutch may be slow to engage as the magnet must pull the armature in from a greater distance.

### MAINTENANCE

#### 7.1 MAINTENANCE CHART - RECOMMENDED SERVICE INTERVALS

BREAK-IN (FIRST 10)	HOURS					PROCEDURE	COMMENTS
	8	40	100	200	500		
X						Check all hardware for tightness	
X						Check hydraulic oil level	See paragraph 7.3
X						Check all belts for proper alignment	See paragraph 7.8
X						Change engine oil and filter	See paragraph 7.4
X						Check coolant level	See paragraph 7.11
X						Check hydraulic hoses for leaks	Use extreme caution when checking the hydraulic hoses. See paragraph 2.6
	X					Check LPG fuel system for leaks	See Engine Owner's Manual
	X					Check engine oil level	See paragraph 7.4
	X					*Clean mower	See paragraph 7.12
	X					Check condition of blades	See paragraph 7.9
	X					Apply grease to fittings	See paragraph 7.2
	X					Check tire pressure	See paragraph 7.10
	X					Inspect seat belt for wear or damage	See paragraph 2.5
	X					Check the operator interlock system	See paragraph 4.2
	X					Check coolant level	See paragraph 7.11
		X				Check battery electrolyte level clean battery posts and cables	See paragraph 7.7
		X				Check belts for proper alignment	See paragraph 7.8
			X			Apply grease to fittings	See paragraph 7.2
			X			Change engine oil	See paragraph 7.4
			X			*Clean air cleaner element	See paragraph 7.6
			X			Check lubricant in cutter deck gearbox	See paragraph 7.11

\* Perform these maintenance procedures more frequently under extreme dusty or dirty conditions

## Section 7

### MAINTENANCE CHART - RECOMMENDED SERVICE INTERVALS (CONT'D)

BREAK-IN (FIRST 10)	HOURS					PROCEDURE	COMMENTS
	8	40	100	200	500		
				X		Apply grease to fittings	See paragraph 7.2
				X		Check hardware for tightness	
				X		Change engine oil filter	See paragraph 7.4
				X		Check hydraulic oil level	See paragraph 7.3
					X	Replace engine fuel filter	See paragraph 7.5
					X	Drain hydraulic system and replace hydraulic oil	Use SAE 20W50 Motor Oil. See paragraph 7.3
					X	Replace hydraulic oil filter	See paragraph 7.3
					X	Replace cutter deck gearbox lubricant	See paragraph 7.11
					X	Change coolant	See paragraph 7.11

## 7.2 LUBRICATION

### GREASE FITTING LUBRICATION CHART (SEE FIGURE 7-1)

LOCATION	LUBRICATION INTERVAL	LUBRICANT	NO. OF PLACES
1 Caster Wheel Pivot *	500 Hours/Yearly	Chassis Grease	2
2 Caster Wheel Bearings	100 Hours/Monthly	Chassis Grease	2
3 Brake Actuator	200 Hours/Monthly	Chassis Grease	2
4 Cutter Deck Bellcranks	100 Hours/Bi-Weekly	Chassis Grease	4
5 Cutter Deck Pusharms	100 Hours/Bi-Weekly	Chassis Grease	2
6 PTO Spindle	40 Hours/Weekly	+Lithium MP White Grease 2125	1
7 Cutter Deck Spindle	40 Hours/Weekly	+Lithium MP White Grease 2125	3
8 Brake Handle	200 Hours/Monthly	Chassis Grease	1
9 Cutter Deck Drive Shaft U-Joints	200 Hours/Monthly	Chassis Grease	2
10 Cutter Deck Drive Shaft Slip Sleeve	40 Hours/Weekly	Chassis Grease	1

+ Compatible Greases:

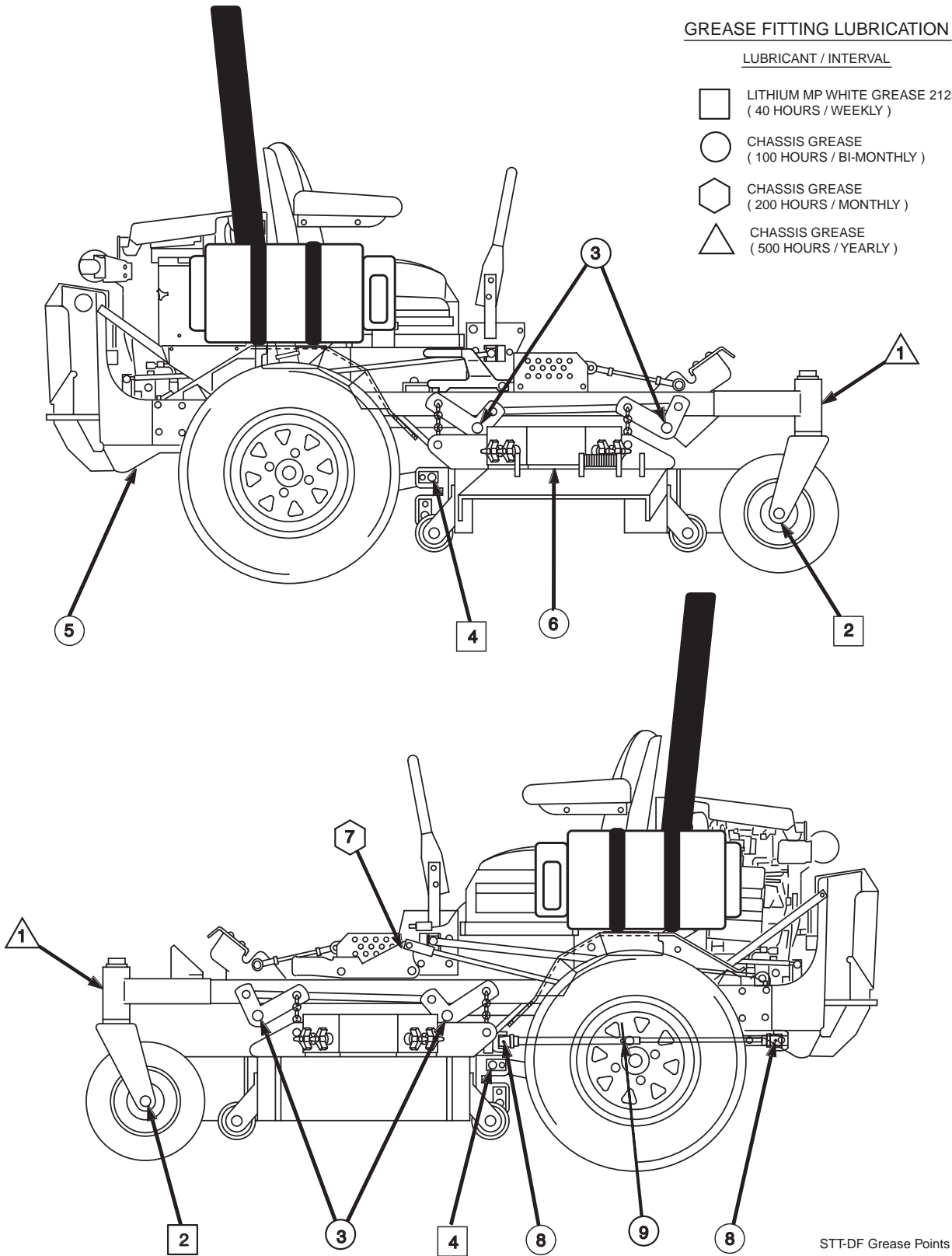
- Mobilix #2 found at Mobil Service Stations
- Ronex MP found at Exxon Service Stations
- Super Lube MEP #2 & Super Stay-M #2 found at Conoco Stations
- Shell Alvania #2 found at Shell Service Stations
- Lidok EP #2 found at industrial shops
- Timken Lithium Multi-Use #2 found at industrial shops

\* PROCEDURE: Remove grease cap, part number 481559. Remove plug, part number 482028-01, and install grease zerk. Apply grease to the fitting until new grease appears at the top of the caster extension. Remove the grease zerk and reinstall the plug. Reinstall the grease cap. Special tool, part number 47007, is recommended for use in the installation of the grease cap.

### GREASE FITTING LUBRICATION

#### LUBRICANT / INTERVAL

- LITHIUM MP WHITE GREASE 2125  
( 40 HOURS / WEEKLY )
- CHASSIS GREASE  
( 100 HOURS / BI-MONTHLY )
- CHASSIS GREASE  
( 200 HOURS / MONTHLY )
- CHASSIS GREASE  
( 500 HOURS / YEARLY )



STT-DF Grease Points

Figure 7-1. Lubrication Fitting Points

## Section 7

### 7.3 HYDRAULIC SYSTEM

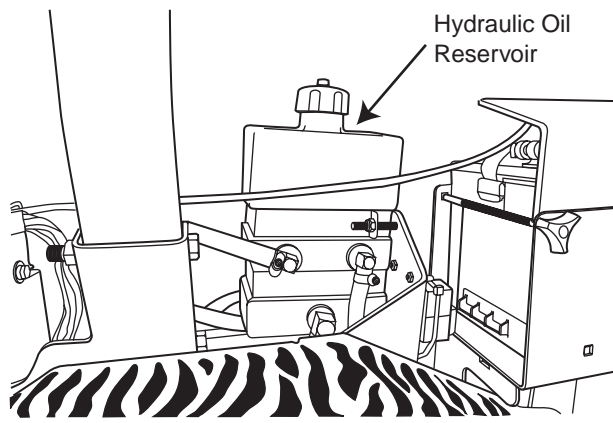
#### A. CHECKING HYDRAULIC OIL LEVEL

The hydraulic oil level should be checked after the first 10 hours of operation. Thereafter, check the oil after every 200 hours of machine operation or monthly, whichever occurs first.

**- IMPORTANT -**

*If the oil level is consistently low, check for leaks and correct immediately.*

1. Wipe dirt and contaminants from around the reservoir cap. Remove the cap from the hydraulic oil reservoir.
2. Visually check the level of hydraulic oil. Hydraulic oil must be at least 3" inches from top of the filler neck. If the level cannot be determined visually, use a clean tape measure to check the level. If the fluid is low, add 20W50 motor oil. **DO NOT** overfill; (overfilling the oil reservoir may cause oil seepage around the cap area).
3. Clean the fill cap and install it onto the reservoir.



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**Figure 7-2. Hydraulic Oil Reservoir**

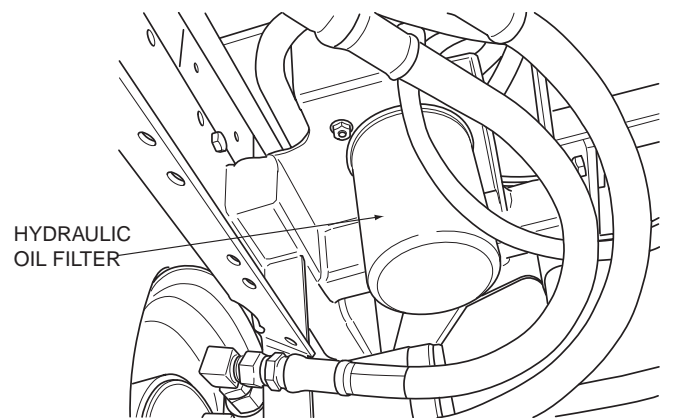
#### B. CHANGING HYDRAULIC OIL

The hydraulic oil should be changed after every 500 hours or annually, whichever occurs first. The oil should also be changed if the color of the fluid has become black or milky. A black color and/or a rancid odor usually indicates possible overheating of the oil, and a milky color usually indicates water in the hydraulic oil.

**- IMPORTANT -**

*The hydraulic oil should be changed if you notice the presence of water or a rancid odor to the hydraulic oil.*

1. Park the mower on a level surface and stop the engine.
2. Place a suitable container under the hydraulic oil filter. Remove the fill cap from the reservoir and the drain plug from the bottom of the drain tee fitting on the filter base. See Figure 7-3. Allow the fluid to drain into the container and properly discard it.



390S0155-1

**Figure 7-3. Hydraulic Oil Filter**

3. Re-install the drain plug into the tee fitting and be sure it is tight.

**- NOTE -**

*Before refilling the hydraulic oil reservoir the hydraulic oil filter should be changed as outlined in Procedure C "Changing Hydraulic Oil Filter Element" on page 33.*

4. Fill the reservoir to 3-1/4" inches from the top of the filler neck with 20W50 motor oil.
5. Replace the reservoir fill cap. Start the engine and drive forward and backward for two minutes. Check the oil level in the reservoir. If necessary, add oil to the reservoir.

### C. CHANGING HYDRAULIC OIL FILTER ELEMENT

The hydraulic oil filter should be changed after every 500 hours of operation or annually, whichever occurs first.

1. Remove the oil filter element and properly discard it. See Figure 7-3. Fill the new filter with clean oil and install the filter. Hand tighten only.
2. Run the engine at idle speed with the speed control lever in neutral for five minutes.
3. Check the oil level in the hydraulic tank. It must be 3-1/4" inches from the top of the filler neck. If necessary, add SAE 20W50 motor oil.

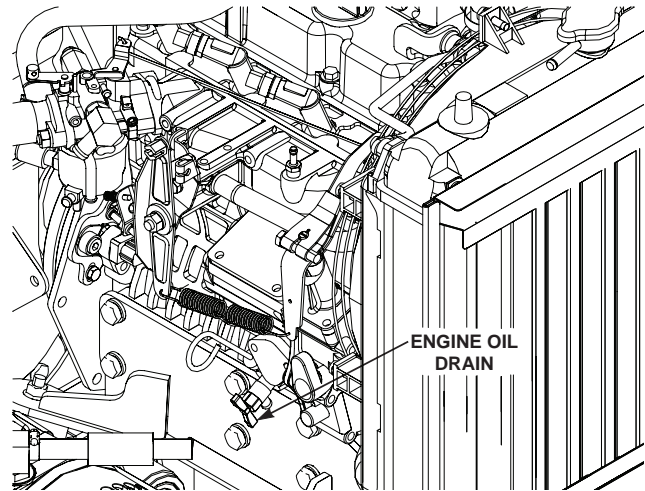


Figure 7-5. Drain Plug Location

### 7.4 ENGINE OIL

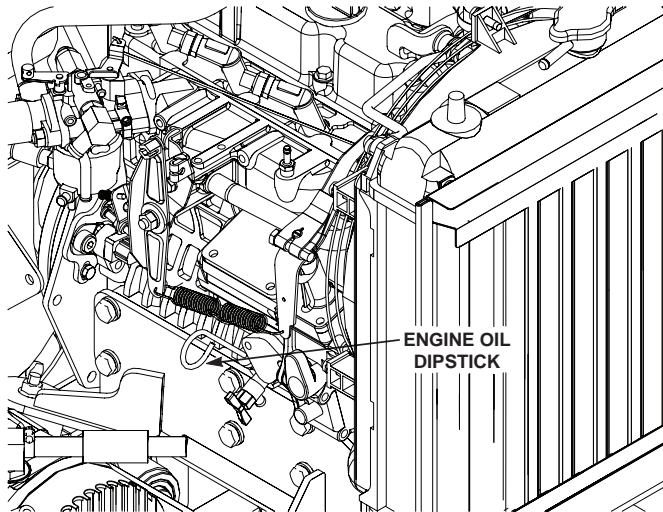


Figure 7-4. Engine Dipstick Location

#### A. CHECKING ENGINE CRANKCASE OIL LEVEL

The engine oil level should be checked after every 8 hours of operation or daily as instructed in the Engine Operator's Manual furnished with this mower.

#### B. CHANGING ENGINE CRANKCASE OIL

After the first 20 hours of operation, change the engine crankcase oil and replace the oil filter. Thereafter, change the engine crankcase oil after every 100 hours of operation or bi-weekly, whichever occurs first. Refer to the Engine Operator's Manual furnished with this mower for instructions.

### C. CHANGING ENGINE OIL FILTER

After the first 20 hours of operation, replace the engine oil filter. Thereafter, replace the oil filter after every 200 hours of operation or every month, whichever occurs first. Refer to Engine Operator's Manual for instructions.

### 7.5 ENGINE FUEL SYSTEM

## DANGER

To avoid injury from burns, allow the mower to cool before removing the fuel tank cap and refueling.

#### A. FILLING THE FUEL TANK

Fill the fuel tank at the beginning of each operating day to within one (1) inch below the filler neck. Do not overfill. Use clean, fresh unleaded gasoline with a minimum octane rating of 87 and a maximum of 10% Ethanol.

DO NOT use E85 Fuel. Using E85 Fuel will cause severe damage to the engine.

To avoid personal injury or property damage, use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive.

## Section 7

1. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
2. Use only an approved gasoline container.
3. Never remove the gas cap or add fuel with the engine running. Allow the engine to completely cool before fueling.
4. Never fuel the machine indoors or in an enclosed trailer.
5. Never store the machine or fuel container where there is an open flame, spark or pilot light such as on a water heater or other appliances.
6. Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
7. Remove the machine from the truck or trailer and fuel on the ground. If this is not possible, then refuel the machine with a portable container, rather than from a gasoline dispenser nozzle.
8. Keep the nozzle in contact with the rim of fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
9. If fuel is spilled on clothing, change clothing immediately and wash affected skin.
10. Replace gas cap and tighten securely.

### B. REPLACING IN-LINE FUEL FILTER ELEMENTS

The engine fuel filter should be replaced after every 500 hours of operation or annually, whichever occurs first. See Figure 7-6.

1. Close the shut-off valve.
2. Remove the two clamps securing the fuel filter to the fuel hose. Remove the fuel filter.
3. Install a new fuel filter. Be sure it is installed in the proper direction. Secure to the fuel hose using the two clamps.
4. Open the fuel shut-off valve.

### C. LPG FUEL SYSTEM

Maintenance must be performed to the LPG fuel system after 1000 hours of operation or annually, whichever occurs first. Contact your authorized Scag service center for details and maintenance. See Engine Owner's manual for service information

1. Secure loose cylinders when transporting. Transport in the upright position.
2. Fill at a reputable dealer.
3. Do not store tanks (empty or filled) inside any building or enclosed trailer.
4. Turn off valve at tank during machine storage.

## **WARNING**

**DO NOT overfill. Follow approved procedures for filling.**

**This cylinder is designed to contain LP Gas; a flammable liquid and gas under pressure.**

**DO NOT expose to fire or heat above 120 degrees Fahrenheit.**

**Be sure all fittings are tight and leak proof.**

**DO NOT attempt repairs. Contact an authorized LP Gas Dealer.**

**Cylinder must be retested within 12 years of manufacture date.**

## **CAUTION**

**It is important that anyone who changes or uses this cylinder be aware of its dangerous potential and use it only in compliance with all applicable governmental regulations including NFPA No.58**

5. Cylinders that show excessive denting, bulging, gouging or corrosion shall be removed from service.
6. Do not dispose of cylinders with out assistance of qualified propane personnel.
7. Replacement cylinders must meet requirements of original cylinders.
8. Refuel outdoors.
9. In cold conditions, 20 degrees F / -6 degrees C and below, the machine should be started on gasoline and warmed for 2 minutes, then switched to LP. Warm engines can be started on LP

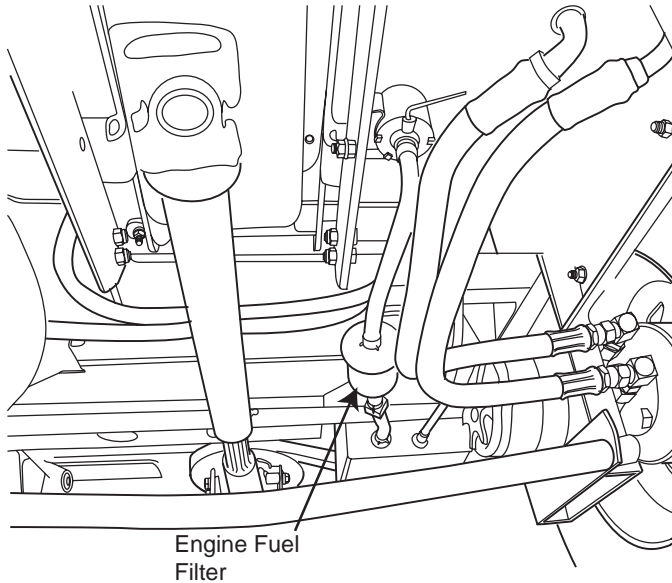


Figure 7-6. Fuel Filter

### 7.6 ENGINE AIR CLEANER

#### A. CLEANING AND/OR REPLACING AIR CLEANER ELEMENT

For any air cleaner, the operating environment dictates the air cleaner service periods. Inspect and clean the air cleaner element after every 100 hours of operation or bi-weekly, whichever occurs first and replace the element if required. See Engine Owner's Manual for service information.

**- NOTE -**

*In extremely dusty conditions it may be necessary to check the element once or twice daily to prevent engine damage.*

1. Unhook the clamps securing the air cleaner cover to the air filter canister. Remove the air cleaner cover and set aside.
2. Remove the air cleaner and inspect.
3. Clean or replace the air cleaner and foam pre-cleaner as recommended by the engine manufacturer.
4. Replace the air cleaner cover and be sure to snap the latches closed.

### 7.7 BATTERY

#### **WARNING**

Lead-acid batteries produce flammable and explosive gases. To avoid personal injury when checking, testing or charging batteries, **DO NOT** use smoking materials near batteries. Keep arcs, sparks and flames away from batteries. Provide proper ventilation and wear safety glasses.

#### **WARNING**

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to cause cancer and reproductive harm. Wash hands after handling.

#### **WARNING**

Electric storage battery fluid contains sulfuric acid which is **POISON** and can cause **SEVERE CHEMICAL BURNS**. Avoid contact of fluid with eyes, skin, or clothing. Use proper protective gear when handling batteries. **DO NOT** tip any battery beyond 45° angle in any direction. If fluid contact does occur, follow first aid suggestions below.

##### BATTERY ELECTROLYTE FIRST AID

**External Contact — Flush with water.**

**Eyes — Flush with water for at least 15 minutes and get medical attention immediately.**

**Internal — Drink large quantities of water. Follow with Milk Of Magnesia, beaten egg, or vegetable oil. Get medical attention immediately. In case of internal contact, DO NOT give fluids that would induce vomiting.**



## Section 7


### A. CHARGING THE BATTERY

Refer to the battery charger's manual for specific instructions.

Under normal conditions the engine's alternator will have no problem keeping a charge on the battery. If the battery has been completely discharged for a long period of time, the alternator may not be able to recharge the battery, and a battery charger will be required.

DO NOT charge a frozen battery. It may explode and cause injury. Let the battery warm before attaching a charger.

Whenever possible, remove the battery from the mower before charging and make sure the electrolyte covers the plates in all cells.

 <h2 style="margin: 0;">WARNING</h2>
<p><b>BATTERIES PRODUCE EXPLOSIVE GASES. Charge the battery in a well ventilated space so gases produced while charging can dissipate.</b></p>

Charging rates between 3 and 50 amperes are satisfactory if excessive gassing or spewing of electrolyte does not occur or the battery does not feel excessively hot (over 125°F). If spewing or gassing occurs or the temperature exceeds 125°F, the charging rate must be reduced or temporarily stopped to permit cooling.

### B. JUMP STARTING

1. The booster battery must be a 12 volt type. If a vehicle is used for jump starting, it must have a negative ground system.
2. When connecting the jumper cables, connect the positive cable to the positive battery post, then connect the negative cable to the negative battery post.

### 7.8 DRIVE BELTS

All drive belts are spring-loaded and self-tensioning, however after the first 2, 4, 8 and 10 hours of operation, the belts should be checked for proper alignment and wear. Thereafter, check the belts after every 40 hours of operation or weekly, whichever occurs first.

#### - NOTE -

*If you experience frequent belt wear or breakage, see your authorized Scag service center for belt adjustment.*

## 7.9 CUTTER BLADES

### A. BLADE INSPECTION

1. Remove the ignition key before servicing the blades.
2. Raise the mower deck to the highest position. Place the lanyard pin in the highest cutting height position to prevent the cutter deck from falling.

 <h2 style="margin: 0;">WARNING</h2>
<p><b>Always wear proper hand and eye protection when working with cutter blades.</b></p>

3. Check the cutter blades for straightness. If the cutter blades appear bent, they will need to be replaced.

 <h2 style="margin: 0;">WARNING</h2>
<p><b>Do not attempt to straighten a bent blade, and never weld a broken or cracked blade. Always replace it with a new blade to assure safety.</b></p>

4. If a blade cutting edge is dull or nicked, it should be sharpened. Remove the blades for sharpening. See "Blade Replacement."

#### - NOTE -

*Keep the blades sharp. Cutting with dull blades not only yields a poor mowing job, but slows the cutting speed of the mower and causes extra wear on the engine and the blade drive by pulling hard.*

### B. BLADE SHARPENING

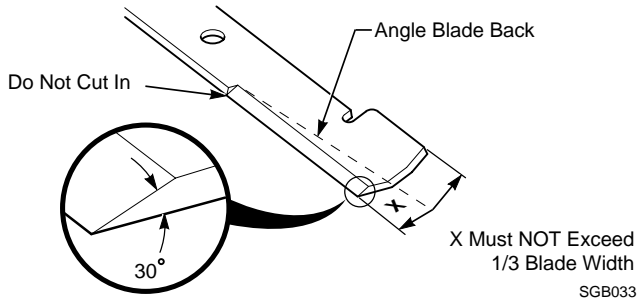
#### - NOTE -

*If possible, use a file to sharpen the blade. Using a wheel grinder may burn the blade.*

**- NOTE -**

DO NOT sharpen the blades beyond 1/3 of the width of the blade. See Figure 7-7.

1. Sharpen the cutting edge at the same bevel as the original. See Figure 7-7. Sharpen only the top of the cutting edge to maintain sharpness.



**Figure 7-7. Blade Sharpening**

2. Check the balance of the blade. If the blades are out of balance, vibration and premature wear can occur. See your authorized Scag dealer for blade balancing or special tools, if you choose to balance your own blades.

### C. BLADE REPLACEMENT



## WARNING

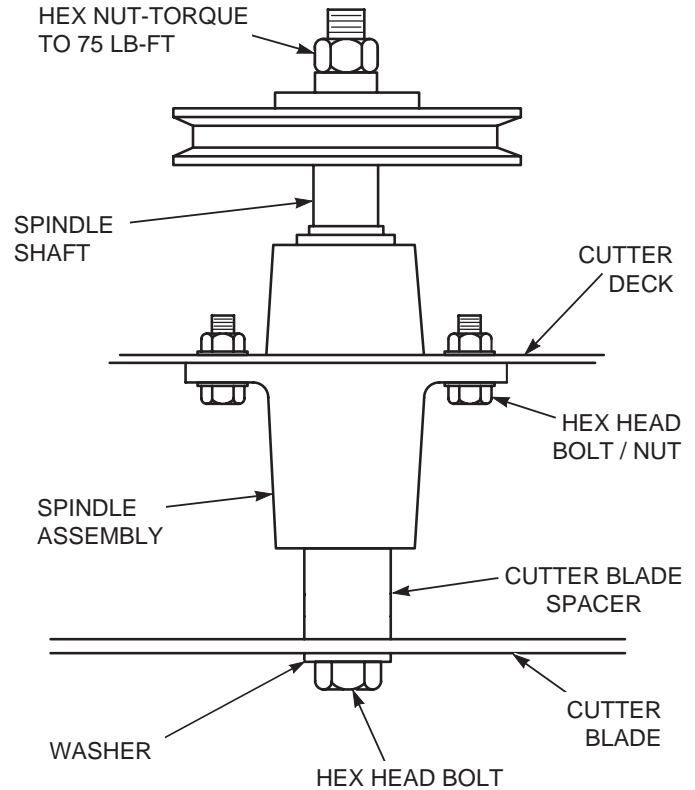
Always wear proper hand and eye protection when working with cutter blades.

1. Remove the ignition key before replacing the blades.
2. Raise the mower deck to the highest position. Place the lanyard pin in the highest cutting height position to prevent the cutter deck from falling.
3. Secure the cutter blades to prevent them from rotating, (use the optional Blade Buddy tool P/N 9212, to assist in securing the cutter blades), remove the nut from the blade attaching bolt. Remove the cutter blade, bolt and spacer from the spindle shaft. See Figure 7-8.

**- NOTE -**

The front of the machine will have to be raised slightly to remove the blade bolt from the cutter spindle.

4. To install the new cutter blade, put the flat washer onto the blade bolt and slide the bolt into the hole in the cutter blade.



**Figure 7-8. Blade Replacement**

**- NOTE -**

Be sure that the blade is installed with the lift wing toward the top.

5. Install the spacer onto the blade bolt and insert the bolt into the cutter spindle shaft.
6. Install the hex nut to the blade bolt at the top of the cutter spindle. Secure the blades from rotating and torque to 75 lb-ft. See Figure 7-8.

## Section 7

### 7.10 TIRES

Check the tire pressures after every 8 hours of operation or daily.

Caster Wheels	Flat Free
Drive Wheels	12 PSI

### 7.11 CUTTER DECK GEARBOX

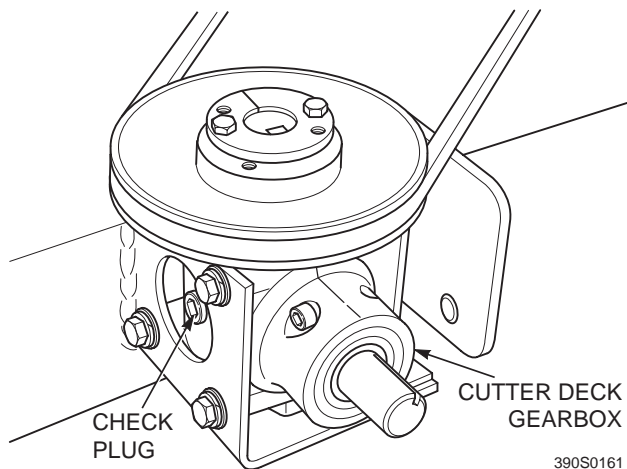
#### A. CHECKING LUBRICANT LEVEL

## ⚠ CAUTION

The cutter deck gearbox can reach high operating temperatures. Allow the cutter deck gearbox to cool before servicing.

The fluid level in the cutter deck gearbox should be checked after every 100 hours of operation or bi-weekly, whichever occurs first.

1. Lower the cutter deck to its lowest position to gain access to the cutter deck gearbox.
2. Clean and remove the check plug from the side of the gearbox. See Figure 7-9.



**Figure 7-9. Cutter Deck Gearbox**

3. Visually check that the lubricant level is up to the bottom edge of the check plug hole. If lubricant is low, add SAE 80W90 lubricant through the check plug hole in the gearbox until it is level with the bottom of the check plug hole. Install the check plug and tighten securely.

#### B. CHANGING LUBRICANT

The lubricant in the cutter deck gearbox should be changed after every 500 hours of operation or yearly, whichever occurs first.

1. Place a suitable container beneath the cutter deck gearbox and locate the gearbox drain plug.
2. Remove the drain plug, drain the lubricant into the container and properly discard it.
3. Re-install the drain plug and add SAE 80W90 lubricant through the check plug hole in the gearbox until it is level with the bottom of the check plug hole. Install the check plug and tighten securely.

### 7.12 COOLING SYSTEM

## ⚠ WARNING

To avoid burns, always allow the engine to cool before removing the radiator cap.

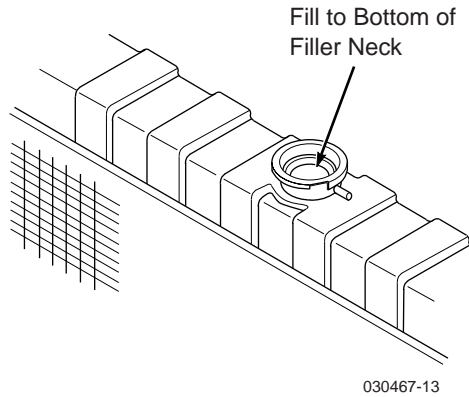
#### A. CHECKING COOLANT LEVEL

The coolant level should be checked before each day of operation.

1. Remove the radiator cap by turning it slowly counterclockwise to the first stop and allow any pressure to be released. Push down on the cap and turn counterclockwise to remove.
2. Visually check the coolant level. The coolant level should be up to the bottom of the filler neck as shown in Figure 7-10. Add a mixture of coolant and soft water as needed.

**- NOTE -**

Refer to the coolant manufacturer's instructions for the proper coolant mixture ratio.



**Figure 7-10. Coolant Level**

3. Replace the radiator cap. Push down on the cap and turn clockwise until it stops.

**- NOTE -**

*The cooling system should be flushed and the coolant replaced every 500 hours of operation or annually. See your Scag dealer for proper coolant replacement.*

### B. CLEANING THE RADIATOR DEBRIS SCREEN

After each day of operation, remove and clean the radiator debris screen.



## CAUTION

**To avoid personal injury, always wear safety glasses when using compressed air.**

1. Pull the debris screen up to remove.
2. Clean the debris screen with compressed air or a water hose.

**- NOTE -**


*Check the radiator for excessive debris and clean with compressed air. Never spray a hot engine with water, use only compressed air to remove debris.*

3. Re-install the debris screen to the radiator.

### C. CHECKING THE FAN BELT TENSION (LIQUID-COOLED ENGINES ONLY)

Periodically check the fan belt tension. The belt should deflect 1/2" with 10 pounds of pressure. See your Scag dealer if the belt is in need of adjustment or replacement.

### 7.13 BODY, DECK, AND UPHOLSTERY



## CAUTION

**Do not wash any portion of the equipment while it is hot. Do not wash the engine; use compressed air.**

1. After each use, wash the mower and cutter deck. Use cold water and automotive cleaners. Do not use pressure cleaners.
2. Do not spray electrical components.
3. Use a mild soap solution or a vinyl/rubber cleaner to clean the seat.
4. Repair damaged metal surfaces using Scag touch-up paint available from your authorized Scag dealer. Wax the mower for maximum paint protection.

## ILLUSTRATED PARTS LIST

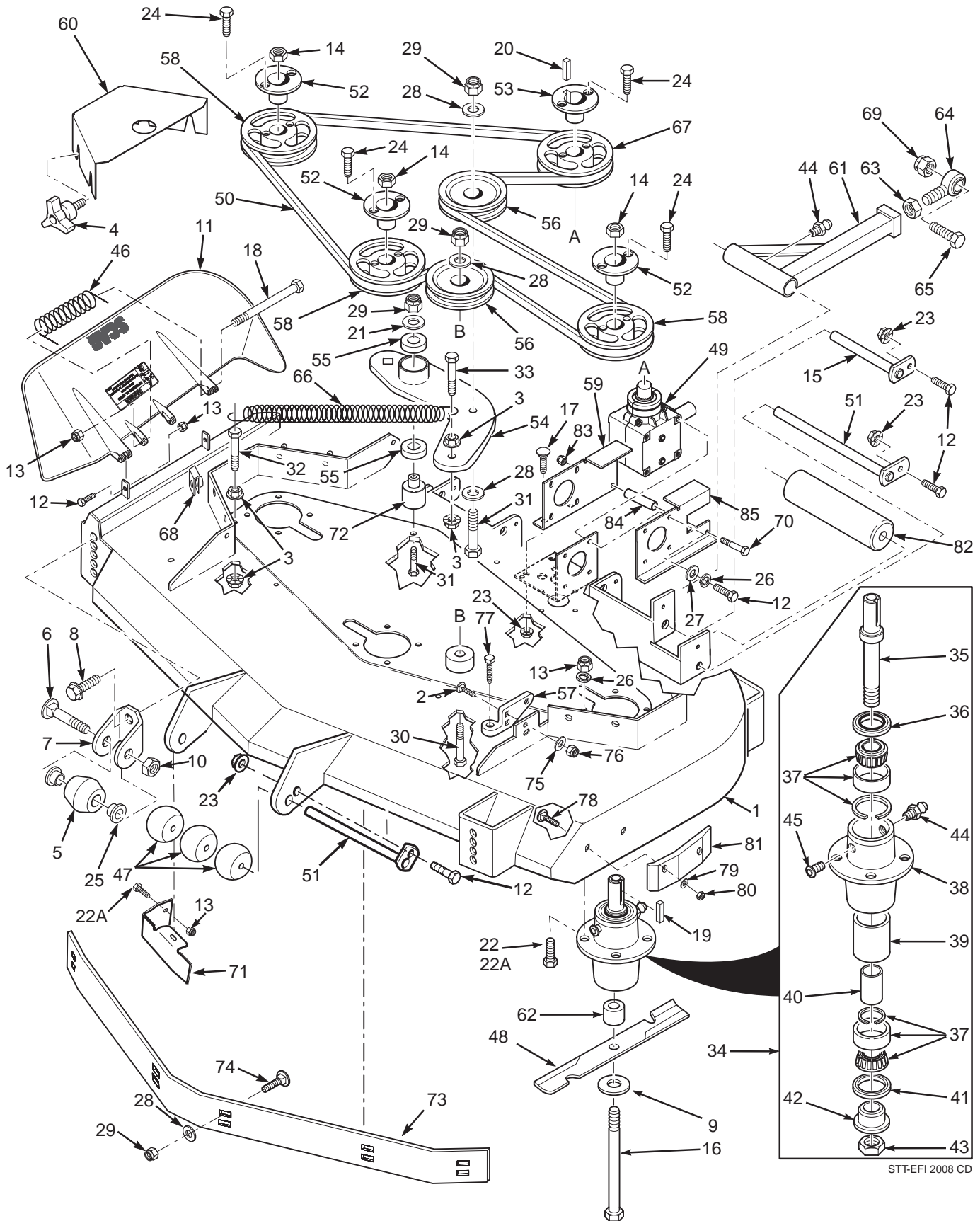
### 8.1 SCAG APPROVED ATTACHMENTS AND ACCESSORIES.

Attachments and accessories manufactured by companies other than Scag Power Equipment are not approved for use on this machine.

Scag approved attachments and accessories:

- Mulch Plate (p/n 9288, 920F)
- Hurricane Mulch (p/n 9285, 920E)
- STT Hitch (p/n 9242)
- STT Bumper (p/n 9256)
- STT Lights (p/n 9279)
- Tiger Striper (p/n 9269)
- Blade Buddy (p/n 9212)

### 61V Cutter Deck



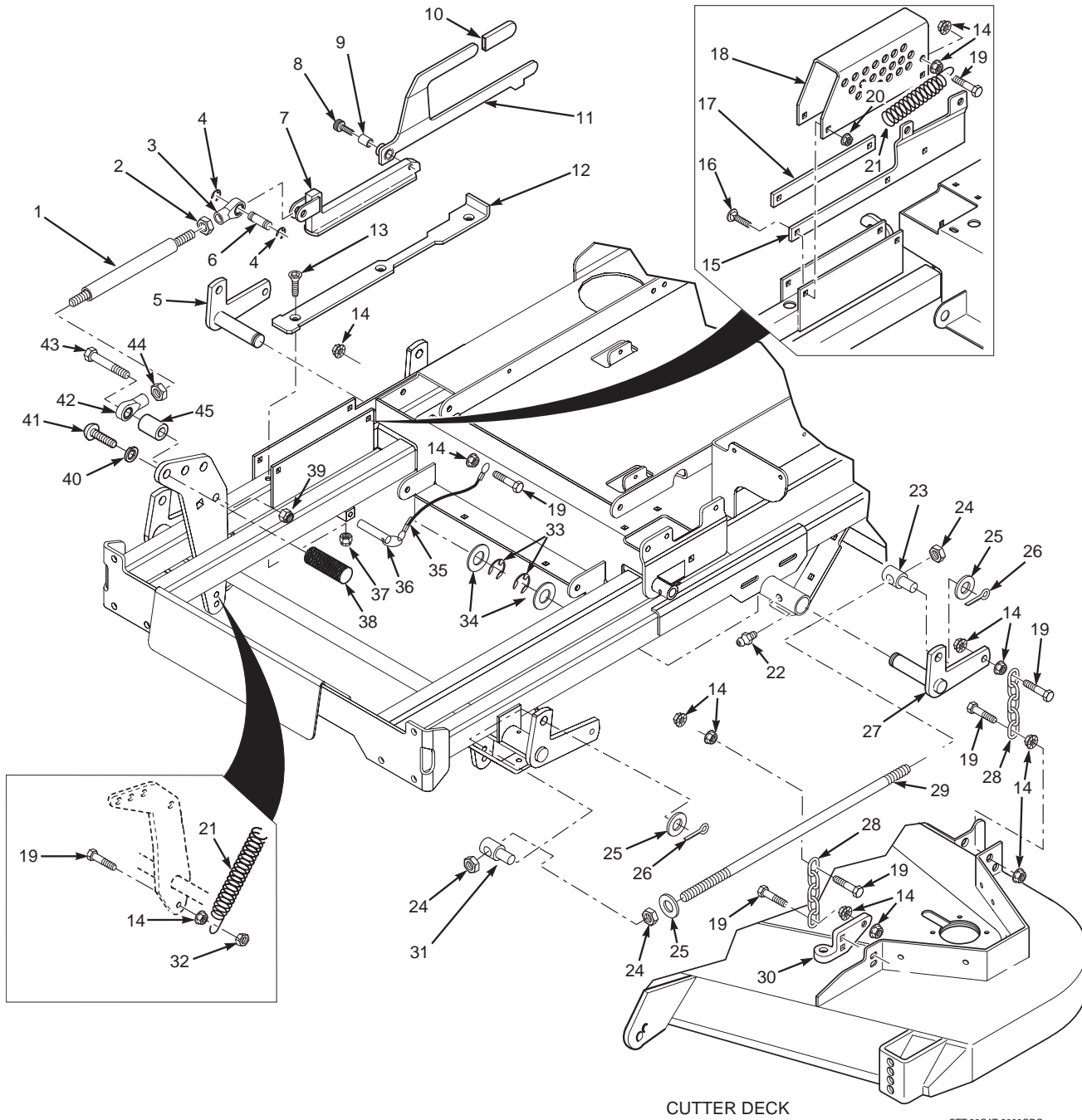
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## 61V Cutter Deck

Ref. No.	Part No.	Description
1	461863	Cutter Deck Velocity Plus
2	04003-40	Bolt, Carriage 7/16-14 x 1-1/4"
3	04019-04	Nut, Hex Serr. Flng. 3/8-16
4	481625-01	Wing Nut, 3/8-16
5	481632	Anti-Scalp Wheel
6	04003-26	Bolt, Carriage 3/8-16 x 4"
7	422478	Anti-Scalp Wheel Bracket
8	04017-27	Bolt, Hex Serr. Flng. 3/8-16 x 1"
9	04043-06	Flatwasher, 5/8" Hardened
10	04021-05	Locknut, 3/8-16 Center Lock
11	461846	Discharge Chute
12	04001-12	Bolt, Hex Hd. 5/16-18 x 1-1/2" - Rear
13	04021-22	Nut, Hex Elastic Stop 5/16-18 Grd. 8
14	04020-09	Nut, 5/8-11 UNC
15	451240	Pusharm Shaft
16	04001-41	Bolt, Hex Hd. 5/8-11 x 9-1/2"
17	04003-12	Bolt, Carriage 5/16-18 x 3/4"
18	04001-108	Bolt, Hex Hd. 5/16-18 x 4-1/2"
19	04063-08	Key, 1/4 x 1/4 x 2"
20	04063-01	Key, 1/4 x 1/4 x 1-1/4"
21	04043-04	Flatwasher, 3/8 (.39 x .938 x .105") HD
22	04001-176	Bolt, Hex Hd. 5/16-18 x 1-3/4"
23	04019-03	Nut, Hex Serr. Flng. 5/16-18
24	04001-172	Bolt, Hex Hd. 1/4-20 x 1" Grd. 8
25	48100-15	Bushing, .376" I.D. Oilite
26	04030-03	Lockwasher, 5/16"
27	04040-15	Flatwasher, 5/16" (.375 x .875 x .083")
28	04041-07	Flatwasher, 3/8" (.391 x .938 x .105")
29	04021-09	Nut, Hex Elastic Stop 3/8-16
30	04001-62	Bolt, Hex Hd. 3/8-16 x 3-1/4"
31	04001-54	Bolt, Hex Hd. 3/8-16 x 3"
32	04001-20	Bolt, Hex Hd. 3/8-16 x 1-1/2"
33	04001-136	Bolt, Hex Hd. 3/8-16 x 1-1/2" Grd. 8
34	461663	Spindle Assembly
35	43589	Spindle Shaft
36	481024	Seal, Top
37	481022	Bearing Assembly
38	43644	Spindle Housing
39	43312	Spacer, Outside
40	43296	Spacer, Inside
41	481025	Seal, Bottom
42	43297	Spindle Bushing, Bottom
43	481035	Nut, Special 1-1/16-18
44	48114-04	Grease Fitting
45	48677	Relief Fitting, Tapered Spindle

Ref. No.	Part No.	Description
46	483378	Spring, Discharge Chute
47	482295	Wheel, Anti-Scalp
48	482879	Cutter Blade, 21"
49	482486	Gearbox Assembly, Deck Drive
50	481558	Belt, Cutter Deck Drive
51	45944	Roller Shaft
52	48926	Tapered Hub, 1-1/8" Bore
53	48141	Tapered Hub, 1" Bore
54	461842	Idler Arm, Cutter Deck
55	48224	Bearings, Ball
56	483215	Pulley, Idler
57	461929	Lever Assembly, Deck Level (Incl. 77)
58	482745	Pulley, 6.35" O.D. (61")
59	424798	Mounting Plate, RH Gearbox
60	424325	Belt, Cover
61	461516	Pusharm (Incl. 44, 63 & 64)
62	43590	Spacer, Spindle Bottom
63	04020-16	Nut, Hex Hd. 5/8-18 UNF
64	48763	Rod End, 5/8" Male RH Thread
65	04001-79	Bolt, Hex Hd. 5/8-11 x 4-1/2"
66	483704	Spring, Cutter Deck
67	482746	Pulley, 6.75 O.D.
68	04110-03	U-Nut, 3/8-16
69	04021-13	Nut, Hex Elastic Stop 5/8-11
70	04001-154	Bolt, Hex Hd. 5/16-18 x 4-3/4"
71	424209	Discharge Baffle 61V
72	43503	Pivot, Idler - Short
73	424841	Baffle, Custom Cut 61V
74	04003-23	Bolt, Carriage 3/8-16 x 1"
75	04040-11	Flatwasher, 7/16 (.500 x 1.25 x .083")
76	04021-11	Nut, Elastic Stop 7/16-14
77	483167	Bolt, Deck Adjust
78	04003-12	Bolt, Carriage 5/16-18 x 3/4"
79	04040-04	Flatwasher, 5/16"
80	04021-04	Nut, Center Lock 5/16-18
81	483176	Wear Pad
82	48038	Wheel, Anti-Scalp
83	04021-10	Nut, Elastic Stop 5/16-18
84	43763	Spacer, Gearbox Mount
85	424799	Mounting Plate, LH Gearbox

### CUTTER DECK CONTROLS



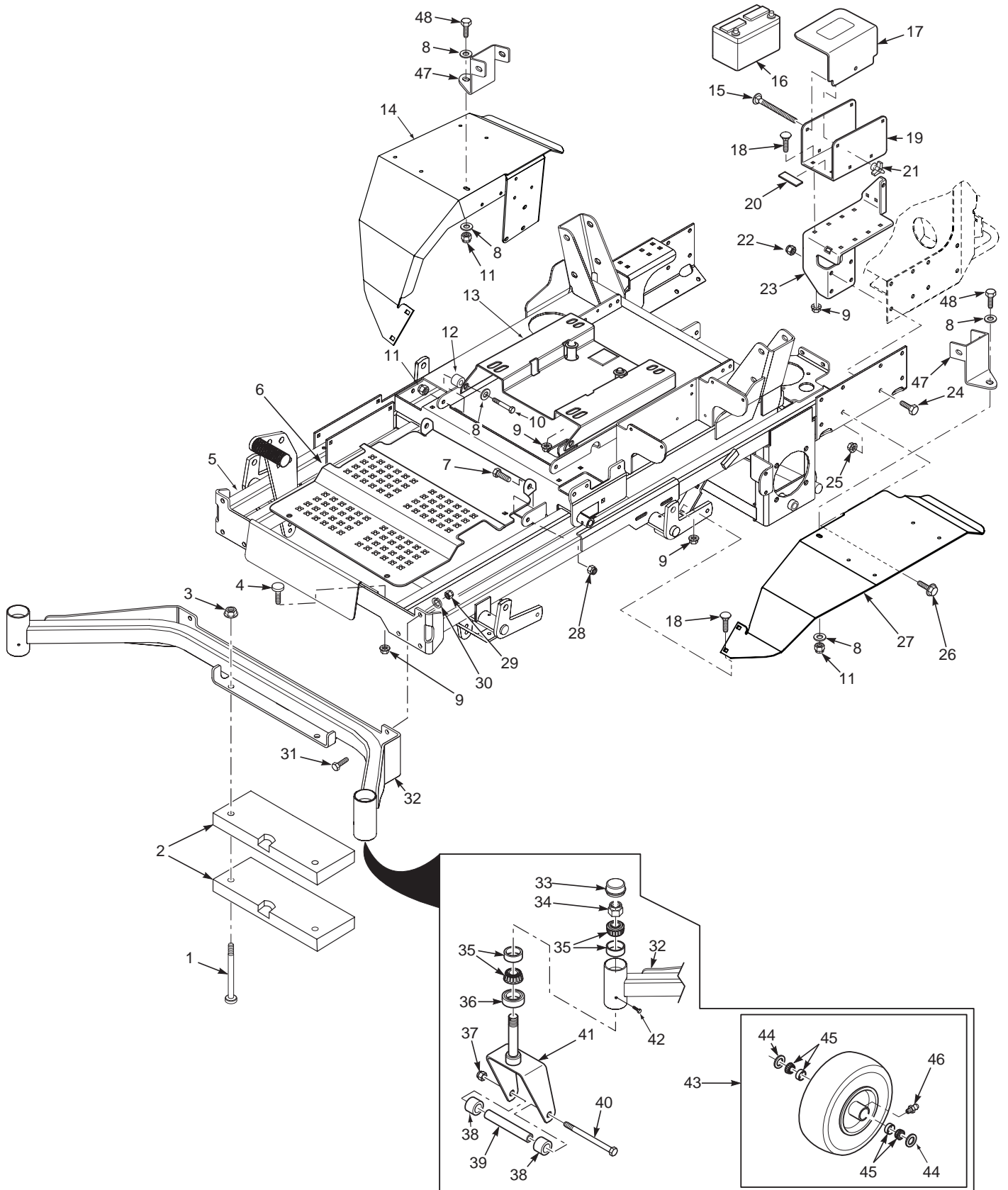
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## CUTTER DECK CONTROLS

Ref. No.	Part No.	Description
1	481764	Link, Deck Lift
2	04020-28	Nut, Jam 1/2-20 LH
3	481766	Rod End, Female - 1/2-20 LH
4	04050-10	Ring, Retaining 1/2" External "E"
5	45905	Bellcrank Weldment, RH Rear
6	43487	Pin, Decklift
7	482429	Slide Weldment, Height Adjustment
8	04009-02	Bolt, Shoulder 1/2 x 3/4"
9	48100-14	Bushing, .502 ID.
10	481428	Grip, Deck Latch
11	462102	Deck Latch (Includes items 9 & 10)
12	424857	Lockplate, Decklift
13	04014-03	Screw, Cap 5/16-18 x 3" FHHS
14	04019-04	Nut, Hex Serrated Flange 3/8-16
15	423509	Guide, Long
16	04003-04	Bolt, Carriage 5/16-18 x 1"
17	422381	Guide, Short
18	423463	Bracket, Cutting Height Adjustment
19	04001-20	Bolt, Hex Head 3/8-16 x 1-1/2"
20	04019 -03	Nut, Hex Serrated Flange 5/16-18
21	481598	Spring, Helper (61" & 72" Cutter Decks Only)
22	48114-04	Grease Fitting
23	43526	Swivel Joint, LH
24	04020-09	Nut, Hex 5/8-11
25	04040-09	Flatwasher, 5/8" (.656 x 1.312 x .095)
26	04061-07	Cotter Pin, 3/16 x 1"
27	45904	Bellcrank Weldment, LH Rear
28	48540	Chain
29	04004-48	Stud, 5/8-11 x 26.0"
30	461929	Lever Assembly, Deck Level
31	43527	Swivel Joint, RH
32	04021-05	Locknut, 3/8-16 Center Lock
33	04050-08	Ring, Retaining 1" External "E"
34	04041-14	Flatwasher, 1" (1.062 x 1.50 x .048)
35	481547	Lanyard, Deck Height Pin
36	04067-09	Ring Pin, 1/2 x 3.06"
37	04021-09	Nut, 3/8-16 Elastic Stop
38	424504	Foot Pedal, Height Adjustment
39	04021-07	Nut, Hex Elastic Stop 1/2-13
40	04030-07	Lockwasher, 5/8"
41	04105-01	Capscrew, 5/8-11 x 1-1/2"
42	481765	Rod End, Female - 1/2-20 RH
43	04001-74	Bolt, Hex Head 1/2-13 x 3"
44	04020-27	Nut, Jam 1/2-20 RH
45	43391	Spacer, Decklift Pedal

### SHEET METAL COMPONENTS

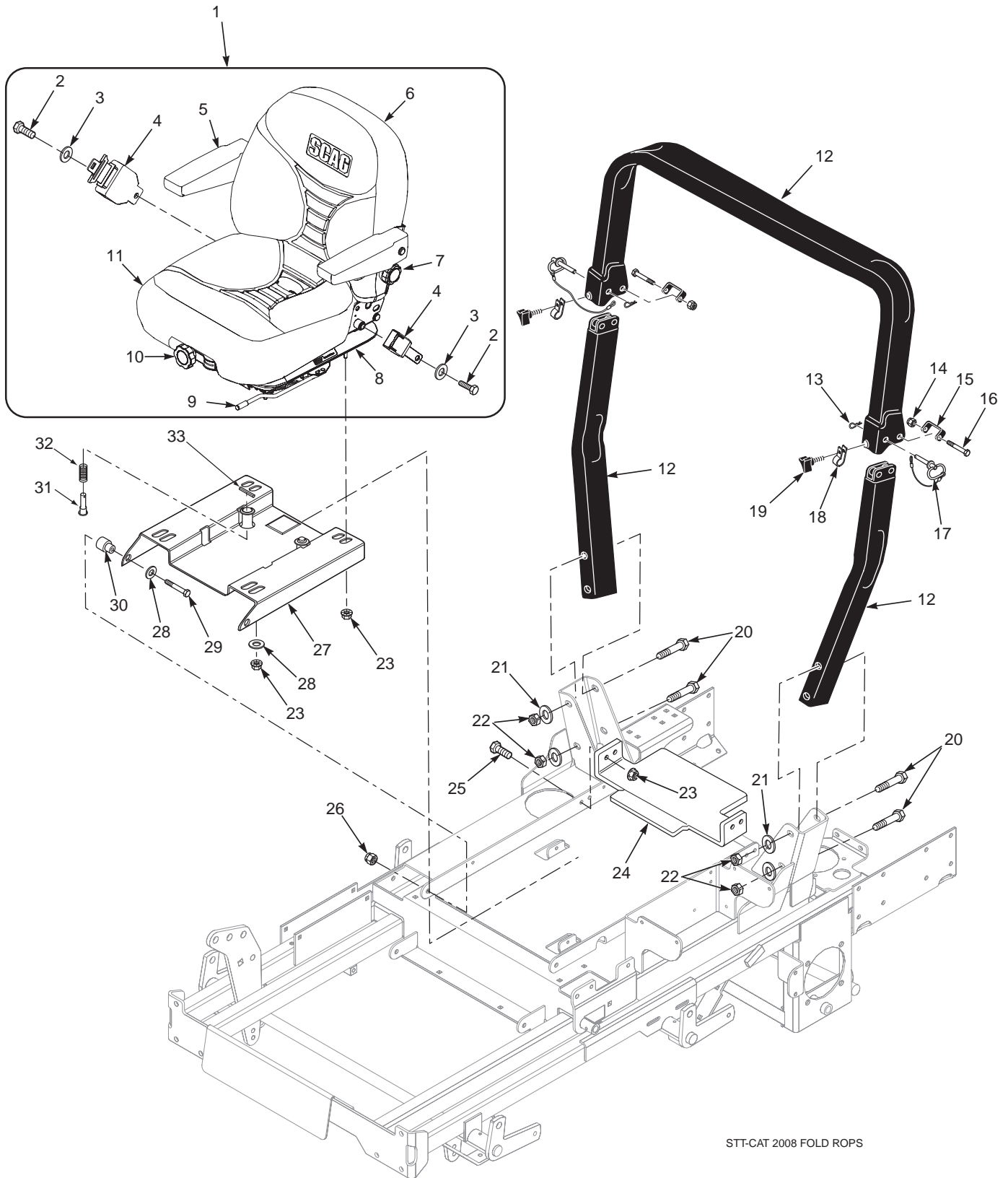


STT-31DF SMC

## SHEET METAL COMPONENTS

Ref. No.	Part No.	Description
1	04001-145	Bolt, Hex Head 1/2-13 x 3.5"
2	41020	Weight
3	04021-07	Nut, Hex Elastic Stop 1/2-13
4	481284	Bumper, Rubber 5/16-18 x 5/8"
5	462145	Main Frame Assembly w/Decals
6	424847	Foot Plate
7	04001-19	Bolt, Hex Head 3/8-16 x 1"
8	04041-07	Flatwasher, 3/8-.391 x .938 x .105
9	04019-03	Nut, Hex Serrated Flange 5/16-18
10	04001-45	Bolt, Hex Head 3/8-16 x 2.0"
11	04021-09	Nut, Elastic Stop 3/8-16
12	43606	Spacer Bushing
13	462147	Seat Plate Weldment w/Decal
14	452026	Fender Weldment, RH
15	04003-01	Bolt, Carriage 1/4-20 x 6"
16	*	Battery (not avail. through Scag)
17	422682	Cover, Battery
18	04003-12	Bolt, Carriage 5/16-18 x 3/4"
19	462007	Plate, Battery Box
20	48661	Rubber Pad
21	04029-01	Wing Nut, 1/4-20 x 3/4"
22	04021-09	Nut, Elastic Stop 3/8-16
23	424488	Battery Box Mount
24	04001-19	Bolt, Hex Head 3/8-16 x 1"
25	04019-04	Nut, Hex Serrated Flange 3/8-16
26	04017-27	Screw, Hex Serrated Flange 3/8-16 x 1"
27	452025	Fender Weldment, LH
28	04021-09	Nut, Hex Elastic Stop 3/8-16
29	04021-11	Nut, Elastic Stop 7/16-14
30	04030-05	Lockwasher, 7/16"
31	04001-28	Bolt, Hex Head 7/16-14 x 1-1/4"
32	451992	Extention Weldment, Caster (Use with 61" Deck)
	451993	Extention Weldment, Caster (Use with 72" Deck)
33	481559	Cap, Grease
34	04021-20	Nut, Hex Elastic Stop 1.0"-14
35	481657	Bearing W/Race
36	481025	Seal, 2.00" OD. x 1.625" Bore
37	04021-07	Nut, Hex Elastic Stop 1/2-13
38	43584	Spacer, Caster Wheel
39	43583	Sleeve, Caster Wheel (61V)
40	04001-167	Bolt, Hex Head 1/2-13 x 9-1/2" (61V)
41	451416	Yoke Weldment, Caster (61V )
42	482028-01	Plug, 1/4-28 THD Form
43	92785	Wheel Assembly, (Inc. 44, 45, & 46)
44	482622	Seal
45	482621	Bearing w/ Race
46	48114-10	Grease Fitting
47	424999	Bracket, Fender Support
48	04001-32	Bolt, Hex Head 3/8-16 x 1-1/4"

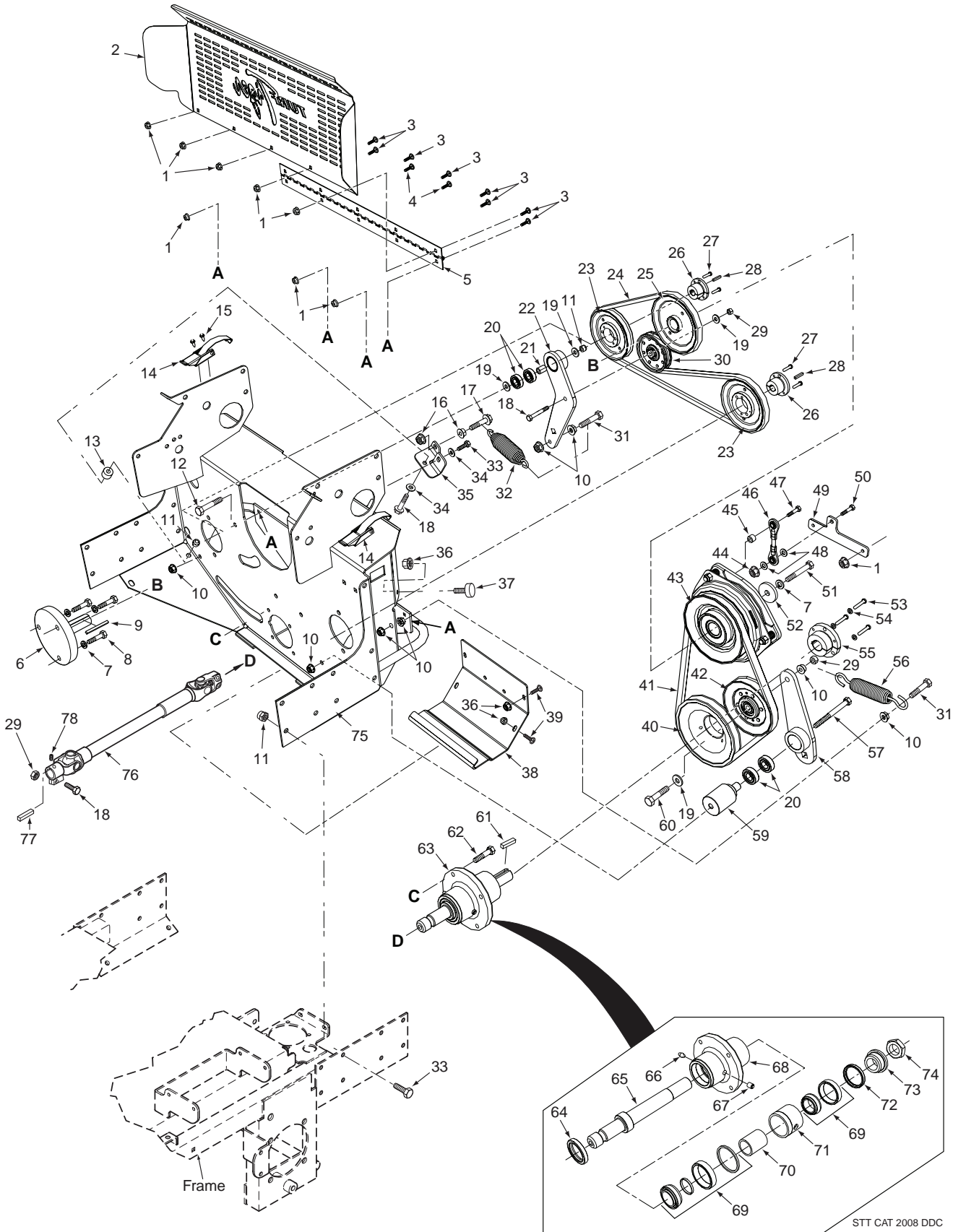
### STT ROLL-OVER PROTECTION SYSTEM - with SUSPENSION SEAT



## STT ROLL-OVER PROTECTION SYSTEM - with SUSPENSION SEAT

Ref. No.	Part No.	Description
1	9292	Suspension Seat Assembly w/seat belt
2	04001-178	Bolt, Hex Head 7/16-20 x 1"
3	04040-11	Flatwasher, 7/16-.500 x 1.25 x .083
4	483594	Retractable Seat Belt
5	482950	Armrest Only
	482945	Armrest Assembly Kit, LH
	482946	Armrest Assembly Kit, RH
6	482940	Back Cushion Kit
7	482943	Lumbar Kit
	482948	Knob Kit
8	482942	Shock Absorber Kit
9	482952	Seat Adjustment, Track Set
10	482944	Weight Adjustment Kit
	482948	Knob Kit
11	482941	Seat Cushion Kit
		Seat Drain Kit (Included with Seat Cushion)
12	9514	STT, ROPS Accessory (incl. items 13 thru 22)
13	04062-06	Hair Pin, Cotter
14	04021-19	Nut, Center Lock 1/2-13
15	424407	Bracket, Stop
16	04001-145	Bolt, Hex Head 1/2-13 x 3-1/2"
17	483262	Pin
18	483265	Clamp
19	481625-03	Thumb Screw, 5/16-18 NC x 3/4"
20	04001-82	Bolt, Hex Head 1/2-13 x 4-1/2"
21	04040-13	Flatwasher, 1/2-.562 x 1.375 x .109
22	04021-19	Nut, Center Lock 1/2-13
23	04019-03	Nut, Serrated Flange 5/16-18
24	461968	Bracket, Seat Hold Down with Decal
25	04001-09	Bolt, Hex Head 5/16-18 x 1"
26	04021-09	Nut, Elastic Stop 3/8-16
27	462147	Seat Plate Weldment w/Decal
28	04041-07	Flatwasher, 3/8-.391 x .938 x .105
29	04001-45	Bolt, Hex Head 3/8-16 x 2"
30	43606	Spacer Bushing
31	43477	Pin Retainer, Spring
32	481389	Spring, Seat
33	04060-01	Roll Pin, Spring 5/32 x 3/4"

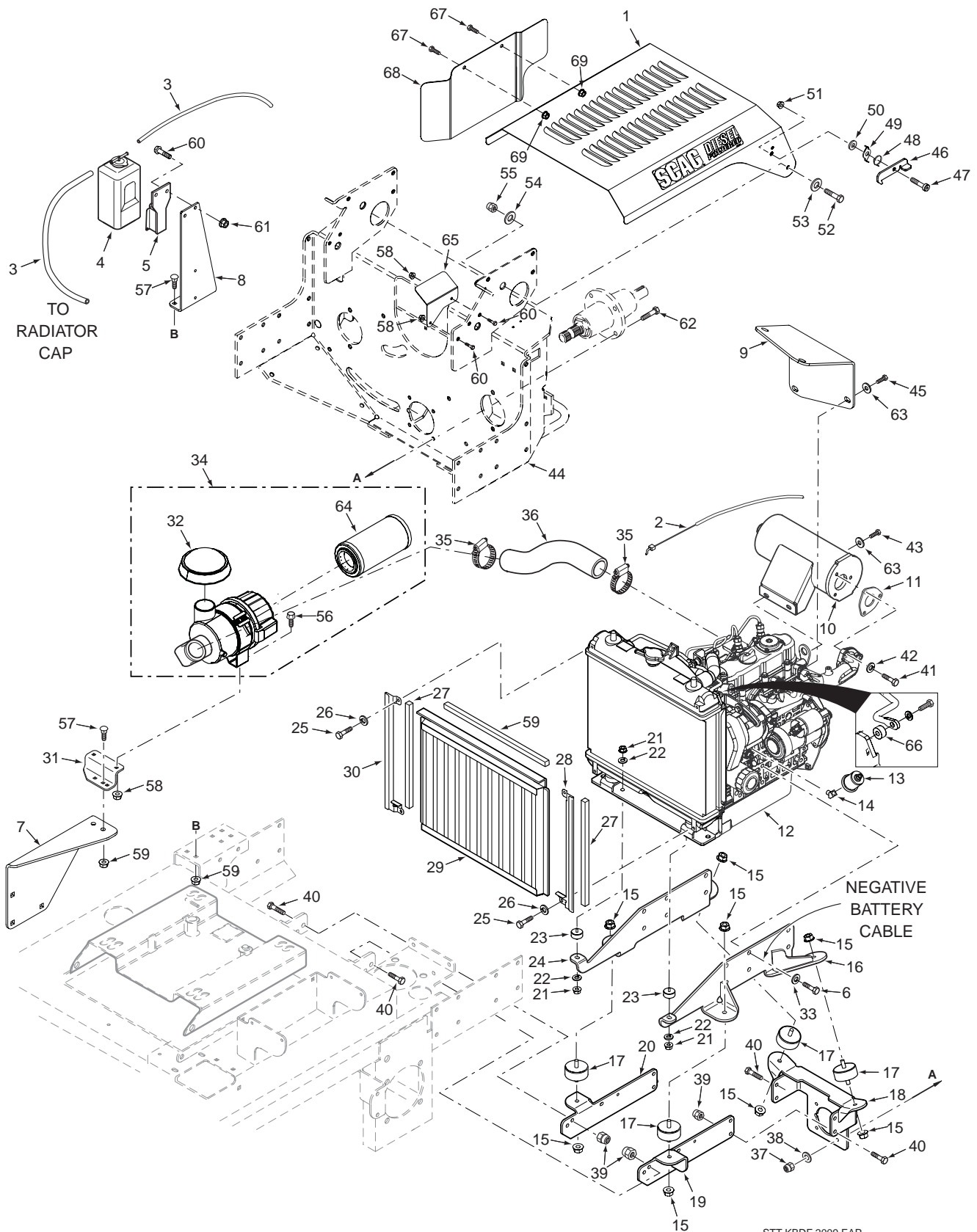
## DECK DRIVE COMPONENTS



## DECK DRIVE COMPONENTS

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	04019-02	Nut, Serrated Flange 1/4-20	46	482433	Rod Assembly, Clutch Anti-Rotation
2	425133	Belt Guard, Rear	47	04001-11	Bolt, Hex Head 5/16-18 x 1-1/2"
3	04003-07	Bolt, Carriage 1/4-20 x 1/2"	48	04040-04	Flatwasher, 5/16"
4	04003-02	Bolt, Carriage 1/4-20 x 3/4"	49	423465	Bracket, Anchor, Anti-Rotation
5	481531	Hinge, Belt Guard	50	04001-10	Bolt, Hex Head 5/16-18 x 1-1/4"
6	482334	Stub Shaft, (Kubota)	51	04102-03	Bolt, Hex Head 7/16-20 x 2-1/4"
7	04030-05	Lockwasher, 7/16" Spring	52	04041-28	Flatwasher, 7/16-.469 x 1.75 x .25
8	04002-26	Bolt, Hex Head M10 x 1.5 x 35	53	04001-109	Bolt, Hex Head 1/4-20 x 1-3/8"
9	04063-23	Key, 1/4 x 1/4 x 3-1/4"	54	04030-02	Lockwasher, 1/4" Spring
10	04019-04	Nut, Serrated Flange 3/8-16	55	481536	Tapered Hub, 1" Bore
11	04021-09	Nut, Elastic Stop 3/8-16	56	483430	Spring, PTO
12	04001-135	Bolt, Hex Head 3/8-16 x 1-3/4" Grd 8	57	04001-171	Bolt, Hex Head 3/8-16 x 4-1/2" Grd 8
13	43286	Spacer	58	461609	Idler Arm Weldment, PTO Drive
14	481309	Latch, Hood	59	43632	Pivot, Idler PTO
15	04011-11	Screw, #10-32 x .56	60	04001-170	Bolt, Hex Head 3/8-16 x 2-1/2" Grd 8
16	04019-06	Nut, Serrated Flange 1/2-13	61	04063-06	Key, 1/4 x 1/4 x 1-1/2"
17	04001-185	Bolt, Hex Head 1/2-13 x 2" Grd 8	62	04001-176	Bolt, Hex Head 5/16-18 x 1-3/4" Grd 8
18	04001-21	Bolt, Hex Head 3/8-16 x 1-3/4"	63	461665	Spindle Assembly, Deck Drive
19	04043-04	Washer, 3/8" Hardened	64	481024	Seal, 2.0 OD x 1.5 Bore
20	48224	Ball Bearing	65	43534	Shaft, Deck Drive
21	43631	Spacer, Idler Bearing	66	48114-04	Grease Fitting, 1/4-28
22	461608	Idler Arm Weldment, Pump Drive	67	48677	Relief Fitting
23	482744	Pulley, 5.75" O.D. - Kubota	68	43644	Spindle Housing
24	482876	Belt, Pump Drive - Kubota	69	481022	Roller Bearing Tapered
25	483829	Pulley, 5.67 Dia. - 1.125 Bore - Kubota	70	43296	Spacer, Inside
26	481884	Tapered Hub, 17mm Bore	71	43312	Spacer, Outside
27	04001-172	Bolt, Hex Head 1/4-20 x 1" Grd 8	72	481025	Seal, 2.0 OD x 1.625 Bore
28	04063-27	Key, 5 x 5 x 35 mm	73	43297	Spindle Bushing, Bottom
29	04021-05	Nut, Center Lock 3/8-16	74	481035	Nut, 1.06-18 Thread
30	483214	Pulley, Idler 4" Dia.	75	452027	Pump Mounting Plate Weldment (DF Engine)
31	04001-136	Bolt, Hex Head 3/8-16 x 1-1/2" Grd 8	76	482438	Driveshaft
32	483088	Spring, Transmission Idler	77	04063-20	Key, 1/4 x 1/4 x 1"
33	04001-19	Bolt, Hex Head 3/8-16 x 1"	78	04012-08	Set Screw, 3/8-16 x 3/4" Torx Socket
34	04041-07	Flatwasher, 3/8-.391 x .938 x .105			
35	424764	Bracket			
36	04019-03	Nut, Serrated Flange 5/16-18			
37	481284	Bumper, Rubber			
38	424691	Cover, Rear			
39	04003-12	Bolt, Carriage 5/16-18 x 3/4"			
40	481398	Pulley, 6.35 Tapered Bore			
41	481460	Belt, Deck Drive			
42	48181	Pulley, Idler 5" Dia.			
43	462011	Clutch, Ogura GT 3.5 - 1.125 Bore			
44	04021-10	Nut, Hex Elastic Stop 5/16-18			
45	43587	Spacer			

### ENGINE & ATTACHING PARTS - KUBOTA DUAL FUEL



STT KBDF 2009 EAP



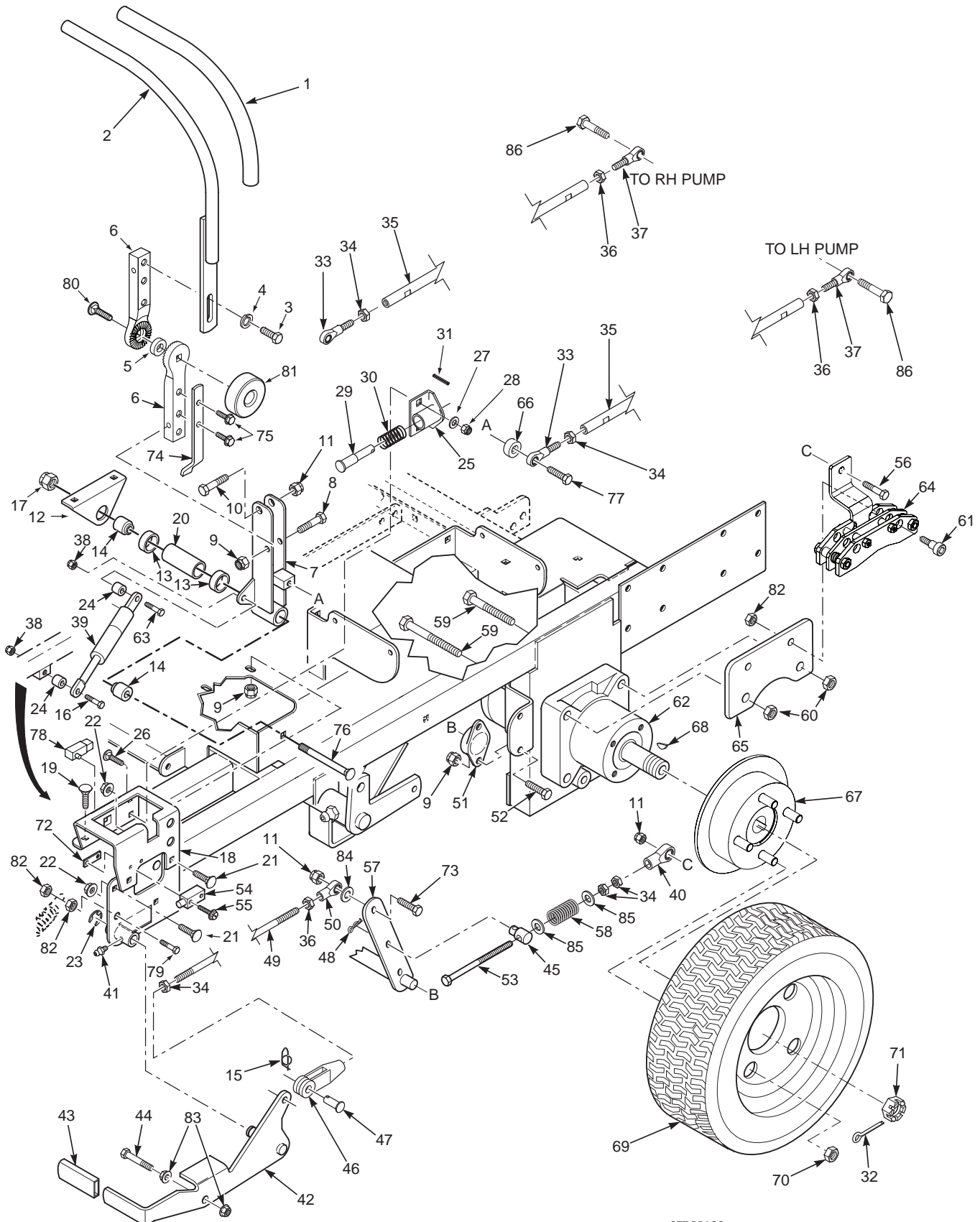
## ENGINE & ATTACHING PARTS - KUBOTA DUAL FUEL

Ref. No.	Part No.	Description
1	462008	Hood Assembly (Incl. 46, 47, 48,49, 50, 51)
2	483356	Throttle Cable
3	**	Hose, Over Spill Bottle
4	**	Over Spill Bottle
5	**	Mounting Bracket, Over-Spill Bottle
6	04002-10	Bolt, Metric Hex Hd. M10-1.25 x 25mm
7	425003	Bracket, Kubota Air Cleaner
8	425005	Bracket, Kubota Coolant Overflow Bottle
9	425002	Bracket, Kubota Coil
10	483811	Muffler, Kubota
11	483387	Gasket, Muffler
12	483335	** Engine, Kubota (not avail. through Scag)
13	481811	Oil Pressure Sender
14	483433	Elbow, 45 Deg.
15	04019-04	Nut, Serr. Flng. 5/16-18
16	451862	Mounting Bracket Weldment LH
17	483351	ISO Mount
18	424452	Plate, Rear Engine Mount
19	424448	Plate, Engine Mount LH
20	424449	Plate, Engine Mount RH
21	04025-02	Nut, Metric Hex M8-1.25mm
22	04030-03	Lockwasher, 5/16" Spring
23	**	Rubber ISO Mount, Radiator
24	451863	Mounting Bracket Weldment RH
25	04106-01	Capscrew, Metric M6-1.0 x 16mm
26	04030-02	Lockwasher, 1/4" Spring
27	483512	Foam, Radiator Screen
28	424624	Debris Screen Track LH
29	462035	Debris Screen Assembly (Incl. 59)
30	424623	Debris Screen Track RH
31	424497	Bracket, Air Cleaner Mount
32	483635	Rain Cap (Enginaire p/n 68381)
33	04030-05	Lockwasher, 7/16" Spring
34	483485-01	Air Filter Assembly (Enginaire p/n 68103)
35	48136-09	Clamp, 2-1/4" Max. Dia.
36	483793	Hose, Air Intake
37	04021-22	Nut, Elastic Stop 5/16-18 Grd. 8
38	04030-03	Lockwasher, 5/16" Spring
39	04021-09	Nut, Elastic Stop 3/8-16
40	04001-19	Bolt, Hex Hd. 3/8-16 x 1"
41	04002-01	Bolt, Metric Hex Hd. M8-1.25 x 30mm
42	04030-03	Lockwasher, 5/16" Spring
43	04002-03	Bolt, Metric Hex Hd. M8-1.25 x 25mm
44	451861	Pump Mounting Plate Weldment (Kubota)
45	04002-03	Bolt, Metric Hex Hd. M8-1.25 x 25mm

Ref. No.	Part No.	Description
46	424633	Latch, Hood
47	04009-07	Bolt, Shoulder 5/16-18 x 1/2"
48	483507	Spring, Hood Latch
49	424634	Lock, Hood Latch
50	04041-07	Flatwasher, 3/8 (.391 x .938 x .105")
51	04021-04	Nut, Center Lock 5/16-18
52	04001-21	Bolt, Hex Hd. 3/8-16 x 1-3/4"
53	04041-07	Flatwasher, 3/8 (.391 x .938 x .105")
54	04041-11	Flatwasher, 3/8 (.406 x 1.50 x 7 Ga.)
55	04021-09	Nut, Elastic Stop 3/8-16
56	04017-16	Bolt, Hex Hd. Serr. Flng. 5/16-18 x 3/4"
57	04003-12	Bolt, Carriage 5/16-18 x 3/4"
58	04019-03	Nut, Serr. Flng. 5/16-18
59	483513	Foam, Radiator Screen Upper
60	04017-16	Bolt, Hex Hd. Serr. Flng. 5/16-18 x 3/4"
61	04019-03	Nut, Serr. Flng. 5/16-18
62	04001-176	Bolt, Hex Hd. 5/16-18 x 1-3/4" Grd. 8
63	04040-04	Flatwasher, SAE 5/16 (.344 x .688 x .065")
64	483637	Air Filter, Outer (Enginaire p/n 68300)
65	425183	Shield, Battery
66	43714	Spacer, Radiator
67	04017-05	Bolt, Serr. Flng 1/4-20 x 3/4"
68	425150	Heatshield, Air Cleaner STT-DF
69	04019-02	Nut, Serr. Flng 1/4-20

\*\* Available through the individual engine manufacturer.

### BRAKE AND STEERING COMPONENTS

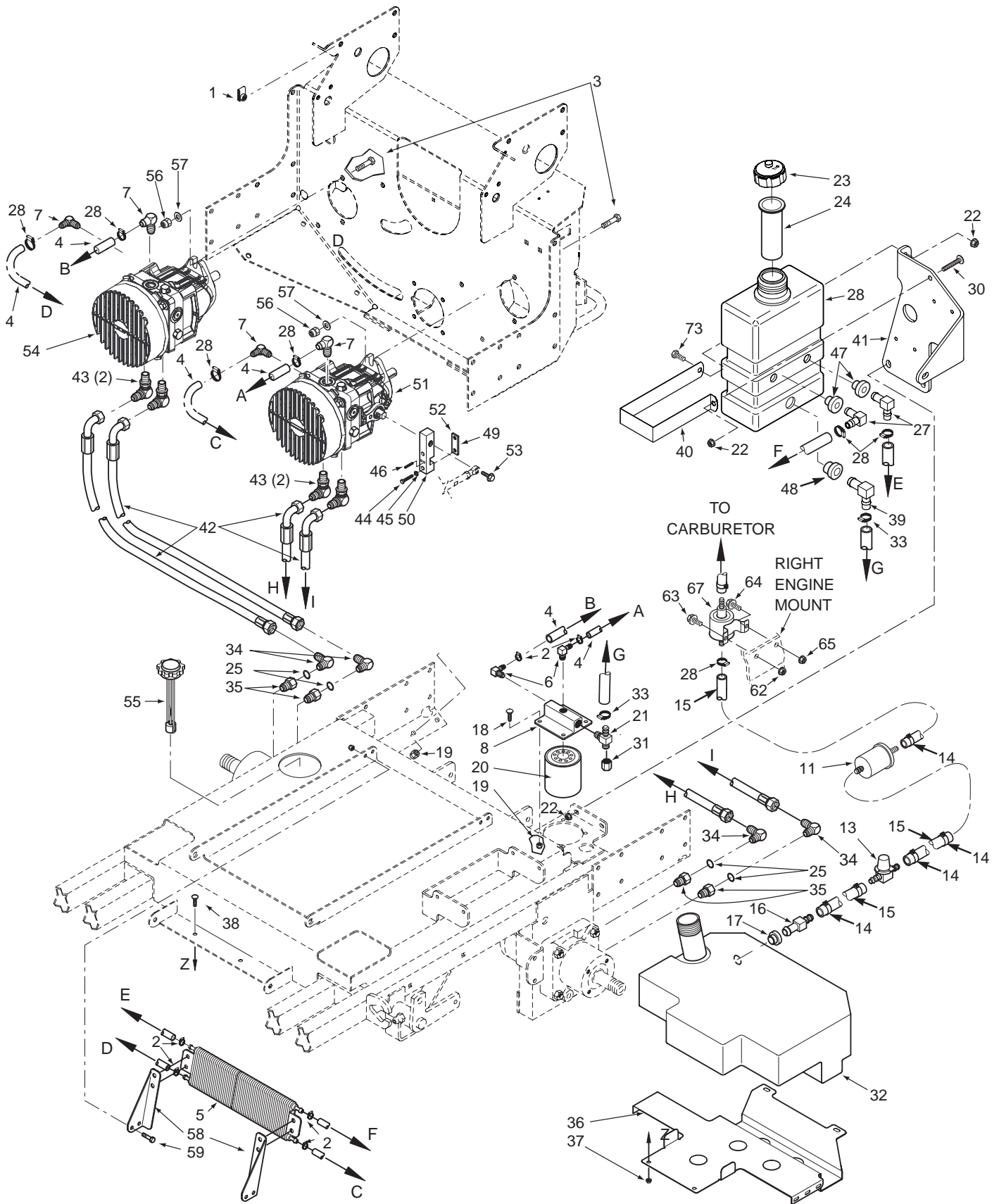


STT DB&SC

## BRAKE AND STEERING COMPONENTS

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	482340	Grip, Handle Bar	46	48343-04	Clevis, Traction Control
2	461914	Handle Bar, LH (Includes item 1)	47	04064-02	Pin, Clevis
	461923	Handle Bar, RH (Includes item 1)	48	04062-01	Hair Pin Cotter
3	04001-09	Bolt, Hex Head 5/16-18 x 1"	49	04004-49	Rod, Parking Brake
4	04030-03	Lockwasher, 5/16"	50	48544	Rod End, LH Thread
5	483250	Rubber Spacer	51	482061	Bushing, Self Align
6	483238	Bar, Control Lever	52	04001-08	Bolt, Hex Head 5/16-18 x 3/4"
7	451483	Control Lever Weldment, LH	53	04001-192	Bolt, Hex Hd 3/8-24 x 5-1/2"
	451484	Control Lever Weldment, RH	54	481637	Switch, Parking Brake
8	04001-17	Bolt, Hex Head 5/16-18 x 2"	55	04010-12	Screw, Hex Slotted Washer Head #10 32 x 3/4"
9	04021-10	Nut, Hex Elastic Stop 5/16-18			
10	04001-45	Bolt, Hex Head 3/8-16 x 2"	56	04001-32	Bolt, Hex Head 3/8-16 x 1-1/4"
11	04021-09	Nut, Hex Elastic Stop 3/8-16	57	45953	Bellcrank, Brake Actuator
12	423488	Mount, Control Linkage	58	48807	Spring
13	48224	Ball Bearings, Neutral Return	59	04001-190	Bolt, Hex Hd 1/2-13 x 2-3/4" (upper)
14	43607	Spacer		04001-52	Bolt, Hex Hd 1/2-13 x 2-1/2" (lower)
15	04069-01	Pin, Rue Cotter 3/8 Dia.	60	04021-19	Locknut, Hex 1/2-13 Center Lock
16	04001-13	Bolt, Hex Head, 5/16-18 x 2.75 Zinc	61	04009-10	Bolt, Shoulder 1/2 x 3/8-16 x 2-3/4"
17	04021-13	Nut, Hex Elastic Stop 5/8-11	62	483677	Wheel Motor, Hydro-Gear 18E
18	461601	Bracket, Control Lever LH	63	04001-12	Bolt, Hex Head, 5/16-18 x 1.75, Zinc
	461602	Bracket, Control Lever RH	64	483701	Brake Caliper
19	04003-04	Bolt, Carriage 5/16-18 x 1"	65	424894	Mounting Bracket, Brake
20	43600	Spacer, Bearing	66	43063	Spacer
21	04003-12	Bolt, Carriage 5/16-18 x 3/4"	67	43771	Wheel Hub/Disk Brake Assembly
22	04019-03	Nut, Hex Serrated Flange 5/16-18	68	04063-25	Key, Woodruff 5/16 x 1"
23	04050-01	Ring, Retaining 5/8" External "E"	69	481850	Wheel Assembly 24 x 12-12 Turf Master
24	43602	Spacer		481851	Rim W/Valve Stem
25	45918	Bracket, Neutral Return		481852	Tire, 24 x 12-12 Turf Master
26	04003-02	Bolt, Carriage 1/4-20 x 3/4"	70	04028-02	Lug Nut, 1/2-20
27	04040-14	Flatwasher, 1/4" (.312 x .750 x .065)	71	48680	Nut, Hex Castle
28	04021-08	Nut, Hex Elastic Stop 1/4-20	72	422373	Threaded Plate
29	43477	Pin, Retaining Spring	73	04001-20	Bolt, Hex Head 3/8-16 x 1-1/2"
30	481389	Spring	74	423491	Actuator, Switch
31	04060-01	Roll Pin, Spring 5/32 x 3/4"	75	04017-16	Bolt, Hex Serrtd Flng 5/16-18 x 3/4"
32	04061-06	Pin, Cotter 9/16 x 1-1/2"	76	04001-79	Bolt, Hex Head 5/8-11 x 4-1/2"
33	482586	Rod End, Male 3/8-24 RH Thread	77	04001-32	Bolt, Hex Head 3/8-16 x 1-1/4"
34	04020-25	Nut, 3/8-24 RH Thread	78	481638	Switch, Handle Neutral
35	483680	Tube, Control Link	79	04001-168	Bolt, Hex Head 3/8-16 x 1-1/4" Grd 8
36	04020-26	Nut, Hex 3/8-24 LH Thread	80	04003-05	Bolt, Carriage 3/8-16 x 1-1/2"
37	482585	Rod End, Male 3/8-24 LH Thread	81	483269	Knob
38	04021-05	Locknut, 5/16-18, Elastic Stop	82	04021-05	Nut, Center Lock 3/8-16
39	482794	Gas Damper	83	04019-04	Nut, Serrated Flange 3/8-16
40	482330	Rod End, 3/8-24 RH Female	84	04041-07	Flatwasher, 3/8-.391 x .938 x .105
41	48114-04	Grease Fitting	85	04040-05	Flatwasher, 3/8-.406 x .812 x .065
42	461082	Lever, Parking Brake (Inc. item 43)	86	04001-21	Bolt, Hex Head, 3/8-16 x 1-3/4"
43	481548	Grip, Parking Brake			
44	04001-22	Bolt, Hex Head 3/8-16 x 2-3/4"			
45	43773	Swivel Joint			

### GASOLINE AND HYDRAULIC SYSTEM - KUBOTA DUAL FUEL



## GASOLINE AND HYDRAULIC SYSTEM - KUBOTA DUAL FUEL

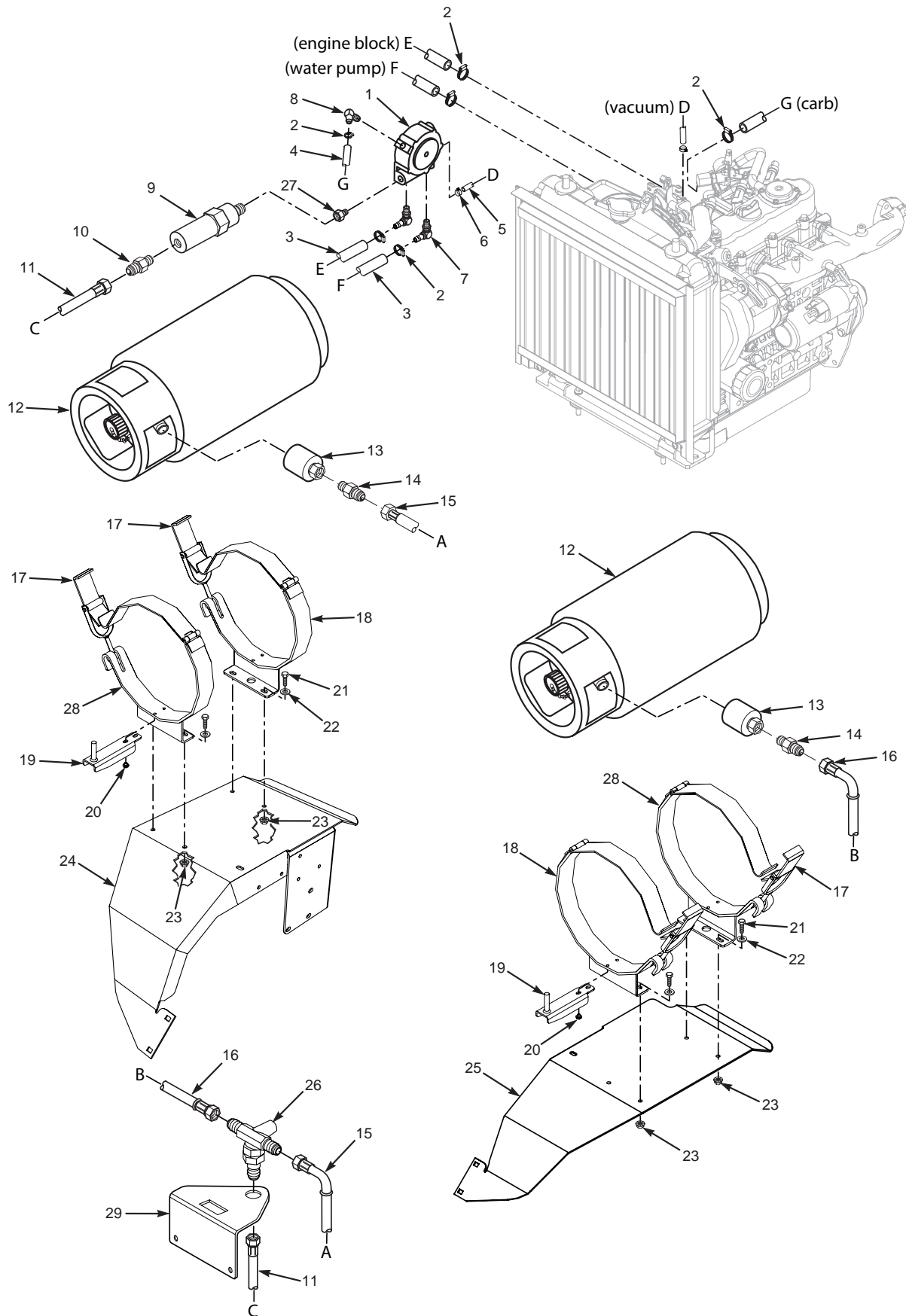
Ref. No.	Part No.	Description
1	04110-01	U-Nut 1/4-20
2	48136-13	Hose Clamp, 0.69" Dia.
3	04001-03	Bolt, Hex Hd. 1/4-20 x 2.0"
4	48811	*** Hose, 3/8" ID Pushlock
5	482505	Oil Cooler
6	481301-03	Elbow, 90 Deg. - 1/4" NPT x 3/8" Hose
7	482266-01	Elbow, 90 Deg. - 9/16" O-ring x 3/8" Hose
8	482417	Oil Filter Base
9	482606	Hose Assy, 1/2" ID (Tank to Filter Base)
10	48136-05	Clamp, .87" max Dia.
11	**	Fuel Filter, Kubota
12	483620	*** Fuel Hose, 5/16" ID. Non-Perm.
13	481308	Valve, Shutoff
14	48059-04	Clamp, 5/16" Fuel Hose
15	483620	*** Fuel Hose, 5/16" ID. Non-Perm.
16	483749	Hose Fitting
17	48309	Bushing
18	04001-09	Bolt, Hex Hd. 5/16-18 x 1.0" Zinc
19	04019-03	Nut, Serr. Flng. 5/16-18
20	48758	Oil Filter
21	482477	Tee, 3/4" O-Ring x JIC x 1/2" Hose
22	04021-08	Nut, Hex Elastic Stop 1/4-20
23	481164	Cap, Hydraulic Tank
24	481507	Insert, Filler Neck
25	48603-02	O-Ring
26	461451	Oil Reservoir Assembly (Incl. 24, 27, 39)
27	482572	Elbow, 90 Deg. 0.38" Hose
	482571	Bushing, 0.56" Dia. Viton
28	48136-13	Hose Clamp, 0.69" dia.
29	48811	*** Hose, 3/8" ID, Pushlock
30	04010-10	Screw, Phillips Head, 1/4-20
31	48571-02	Cap
32	461751	Fuel Tank Assembly (Incl. items 16, 17, 65)
33	48136-05	Clamp, Hose
34	48350-05	Elbow, 90 Deg., 5/8 x 1/2"
35	48938-02	Bushing, 7/8"-14 JIC x 3/4"-16 O-Ring
36	424914	Support Bracket, Fuel Tank
37	04019-03	Nut, 5/16-18 Serr. Flng.
38	04003-02	Bolt, Carriage 1/4-20 x 3/4"
39	482574	Elbow, 90 Deg.
	482573	Bushing, 0.78" Dia. Viton
40	423513	Strap, Hydraulic Tank
41	424524	Support Bracket, Hydraulic Tank
42	483805	Hose Assembly, Pump
43	48572-06	Union, 5/8 x 1/2
44	04001-59	Bolt, Hex Hd., 1/4-20 x 1-1/4"
45	04030-02	Lockwasher, 1/4" Spring

Ref. No.	Part No.	Description
46	04060-09	Roll Pin, Spring 3/16 x 3/4"
47	04017-05	Bolt, Hex Serr. Flng., 1/4-20 x 3/4"
48	483620	*** Fuel Hose, 5/16" ID. Non-Perm.
49	422694	Clamp Plate, Pump Control
50	481793	Block, Pump Control
51	483101	Pump, Left Hand, BDP-16A
52	04021-09	Nut, Hex, Elastic Stop 3/8-16
53	04001-32	Bolt, Hex Hd., 3/8-16 x 1-1/4
54	483100	Pump, Right Hand, BDP 16A
55	482498	Cap, Fuel Tank w/Gauge
56	04021-09	Nut, Hex Elastic Stop 3/8-16
57	04043-04	Flatwasher, 3/8" (.391 x .938 x .105") Grd. 8
58	424483	Mounting Bracket - LH, Oil Cooler
	424484	Mounting Bracket - RH, Oil Cooler
59	04001-08	Bolt, Hex Hd. 5/16-18 x 3/4"
60	482505	Cooler, Oil
61	48136-13	Clamp, 0.69" Dia.
62	04019-03	Nut, Serr. Flng. 5/16-18
63	04017-16	Bolt, Hex Hd. 5/16-18 x 3/4"
64	04017-05	Bolt, Hex Hd. 1/4-20 x 3/4"
65	04019-02	Nut, Serr. Flng. 1/4-20

\*\* Available through the individual engine manufacturer.

\*\*\* Order by the inch.

### LP SYSTEM - KUBOTA DUAL FUEL

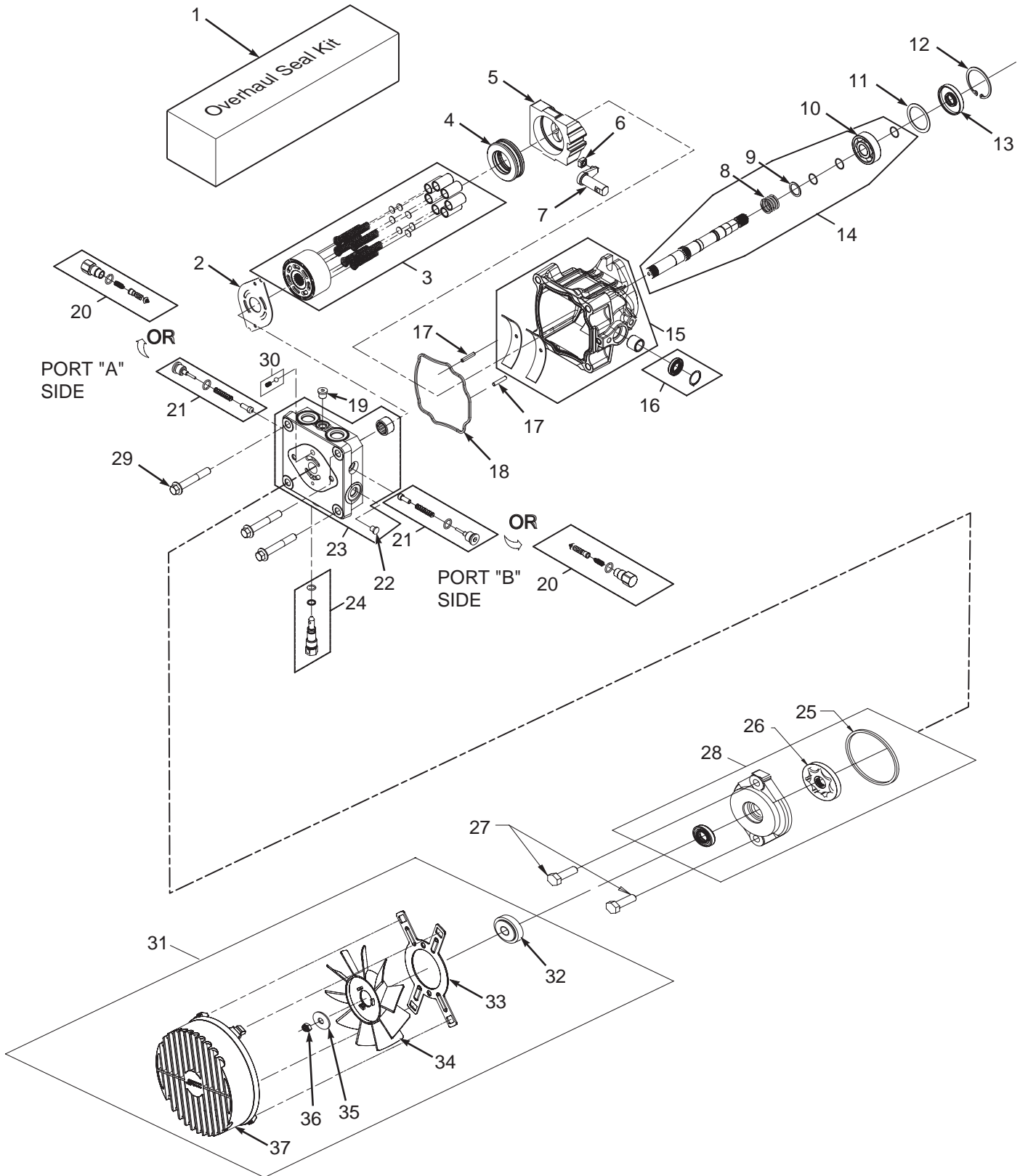


## LP SYSTEM - KUBOTA DUAL FUEL

Ref. No.	Part No.	Description
1		** Regulator, Kubota
2	48136-05	Clamp, 0.87 Max. Dia.
3	483892	Hose, 3/8" ID 300 PSI (order by inch)
4	483891	Hose, LP
5	481179	Hose, Vacuum Line (order by inch)
6	48059-03	Clamp, 3/16" Hose ID
7		** Fitting, 90 Degree - Kubota
8		** Fitting, 90 Degree - Kubota
9	483915	Lockoff Valve LP, Electric
10	483889	Fitting, Union 3/8" Flare x 1/4" Pipe
11	483886	LP Fuel Line, 45-1/2" (to Regulator)
12	483899	LP Fuel Tank
13	483888	LP Quick Coupler
14	483889	Fitting, Union 3/8" Flare x 1/4" Pipe
15	483887	LP Fuel Line, 26-1/2" (RH Tank)
16	483885	LP Fuel Line, 52" (LH Tank)
17	483911	LP Tank Lock Bracket
18	483909	Front LP Tank Mounting Bracket
19	483912	LP Tank Locating Bracket
20		Bolt,
21	04001-19	Bolt, Hex Head 3/8-16 x 1"
22	04041-07	Flatwasher, 3/8-.391 x .938 x .105
23	04019-04	Nut, Serrated Flange 3/8-16
24	452026	Fender Weldment, RH
25	452025	Fender Weldment, LH
26	483890	T-Connector, w/check valves
27		** Fitting, Kubota
28	483910	Rear LP Tank Mounting Bracket
29	452004	Mounting Bracket, Tee Fitting and Selector Switch

\*\* Available through the individual engine manufacturer.

### BDP-16A HYDRAULIC PUMP ASSEMBLY with Cooling Fan

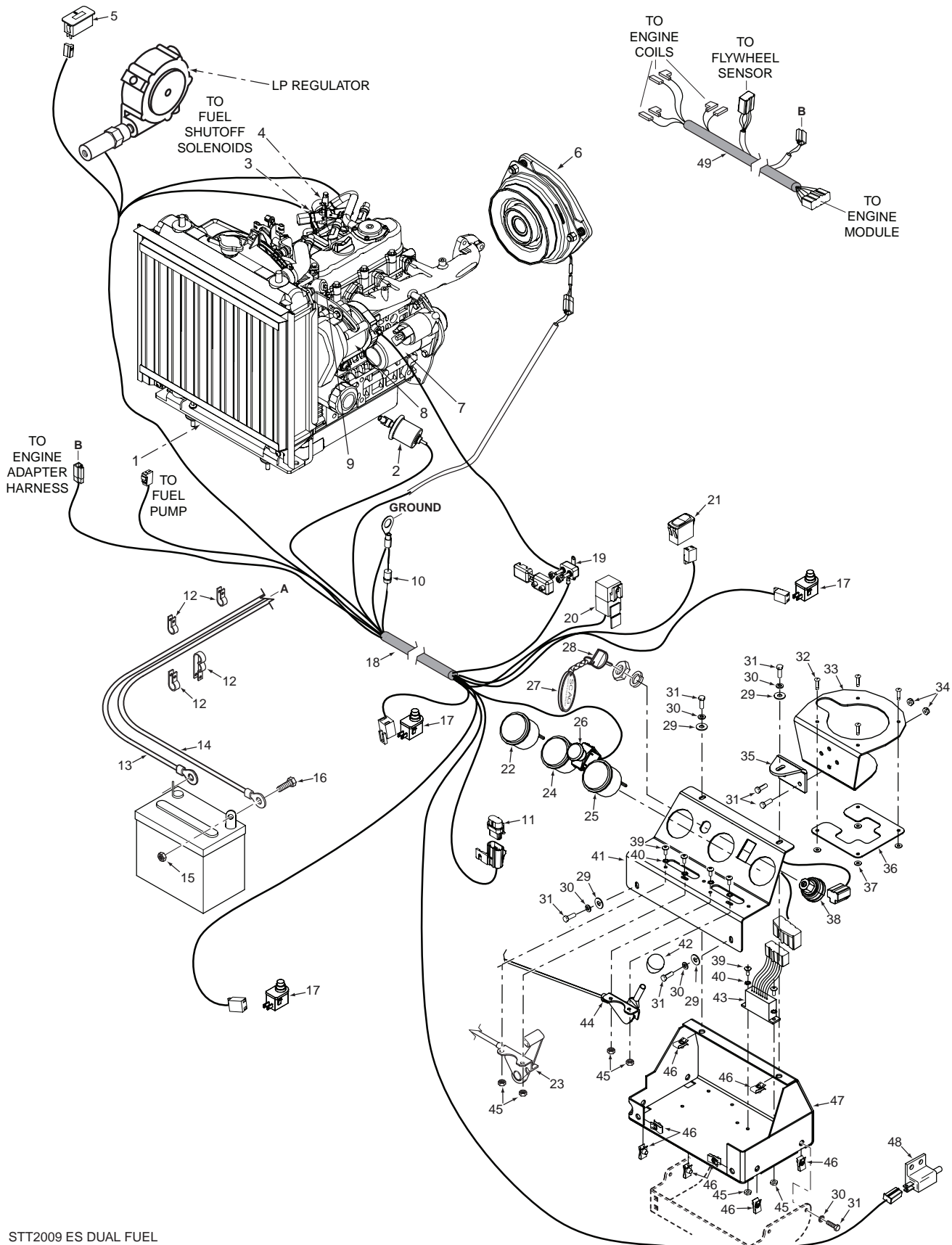




## BDP-16A HYDRAULIC PUMP ASSEMBLY with Cooling Fan

Ref. No.	Part No.	Description
1	HG70740	Overhaul Seal Kit
2	HG51455	Valve Plate
3	HG70735	Cylinder Block Kit - 16cc
4	HG51462	Thrust Ball Bearing Assembly
5	HG51436	Variable Swashplate
6	HG2000015	Slot Guide
7	HG2000014	Trunnion Arm
8	HG2000025	Block Spring
9	HG2000024	Block Thrust Washer
10	HG2000032	Shaft Ball Bearing
11	HG2000023	Spacer
12	HG2000038	Retaining Ring
13	HG51092	Seal
14	HG70578	Kit, Pump Shaft (keyed thru taper)
15	HG70738	Housing Kit
16	HG70739	Trunnion Seal Kit
17	HG50641	Pin
18	HG51437	O-Ring
19	HG9005110-7500	Straight Thread Plug
20	HG70743	Shock Valve Kit (.031 Orifice)
21	HG70742	Shock Valve Kit (.024 Orifice)
22	HG9005200-7500	Straight Thread Plug
23	HG70736	End Cap Kit
24	HG2513030	Bypass Valve Kit
25	HG9004100-1430	O-Ring
26	HG50406	Gerotor Assembly (.19 cu.in./rev.)
27	HG50173	Socket Head Cap Screw (M8 x 1.25-25mm)
28	HG70924	Charge Pump Kit (.19 STD. Splined)
29	HG51457	Hex Screw, Flanged Head (M10 x 1.50-65mm)
30	HG70402	Charge Relief Kit
31	HG71287	Fan Kit (incl. items 32, 34, 35, 36)
32	HG51348	Hub
33	HG52016	Bracket, Shroud
34	HG52014	Fan
35	HG52256	Washer
36	HG44809	Nut
37	HG52059	Shroud

### ELECTRICAL SYSTEM - KUBOTA DUAL FUEL



## ELECTRICAL SYSTEM - KUBOTA DUAL FUEL

Ref. No.	Part No.	Description
1		** Fuel Pump
2	481811	Oil Pressure Sender
3		** LP Shutoff Solenoid
4		** Fuel Shutoff Solenoid
5	483537	Hourmeter
6	462011	Clutch, Ogura GT 3.5 - 1.125 Bore
7		** Starting Motor
8		** Alternator
9	483360	Sending Unit, Water Temp.
10	482253	Diode
11	48298	Fuse, 20 AMP
12	48030-09	Clamp, Cable 1/2" ID.
	48030-10	Clamp, Cable 3/4" ID.
	48030-11	Clamp, Double Cable 5/8" ID.
13	481176-10	Cable, Battery - Red
14	481176-11	Cable, Battery - Black
15	04020-02	Nut, Hex 1/4-20
16	04001-44	Bolt, Hex Head 1/4-20 x .5"
		Battery, (Not Available Through Scag)
17	481638	Switch, Interlock, Normally Open
18	483810	Main Wire Harness, STT Dual Fuel
19	482784	Circuit Breaker, 50 AMP
	482785	Cover, Circuit Breaker
20	483013	Relay, 12V
21	483815	Switch, Fuel Selector
22	481184	Volt Meter (Includes Mounting Hardware)
23	481182	Indicator Light, Glow Plugs (Includes Mounting Hardware)
24	481805	Engine Oil Pressure Gauge (Includes Mounting Hardware)
25	481183	Water Temperature Gauge (Includes Mounting Hardware)
26	483162	Switch, PTO
27	462069	Key Assembly w/Fob
28	483366	Key, Ignition
29	04040-14	Flat Washser, 1/4"
30	04030-02	Lockwasher, 1/4"
31	04001-01	Bolt, Hex Head 1/4-20 x 3/4"
32	04090-02	Pop Rivet, 3/16" x 5/8"
33	9240	Cupholder
34	04021-08	Nut, Elastic Stop 1/4"-20
35	423674	Bracket, Cupholder Mounting
36	482544	Retainer, Cupholder
37	04041-19	Flatwasher, 0.196 ID.
38	483758	Key Switch (Includes Mounting Hardware)
39	04010-01	Screw, Phillips Washer Head #10-32 x 1/2"
40	04031-01	Lockwasher, #10 External Tooth
41	461916	Instrument Panel, Top w/Decals
42	483533	Knob, Throttle
43	481808	Electronic Control Module
44	483746	Throttle Control
45	04020-01	Nut, Hex #10-32
46	04110-01	U-Nut, 1/4-20
47	451879	Base, Instrument Panel
48	481637	Switch, Interlock, Park Brake Normally Open
49	483879	Wire Harness Adapter, Kubota Dual Fuel

\*\* Available through the individual engine manufacturer.

### REPLACEMENT DECALS AND INFORMATION PLATES

**DANGER**

**SPINNING BLADES**

**KEEP CLEAR**

**BLADE CONTACT & THROWN OBJECTS CAN INJURE**

1

**WARNING**

**ROTATING BLADES AND BELTS**

- Keep hands, feet & clothing clear
- Keep all guards in place
- Shut off engine & disengage blade clutch before servicing
- Use caution in directing discharge
- Read instruction manual before operating

**DO NOT OPERATE UNLESS GRASS CATCHER, MULCHING KIT OR DISCHARGE CHUTE IS INSTALLED**

2

MANUFACTURED UNDER ONE OR MORE OF THE FOLLOWING PATENTS:

4,487,006	4,885,903	4,920,733	4,967,543
4,991,382	4,998,948	5,042,239	5,117,617
5,133,176	5,826,416	5,832,708	5,865,018
6,192,666	6,766,633	6,892,519	6,996,962
7,065,946	7,197,863	7,237,374	7,373,768

PATENTS PENDING

3

**CAUTION**

Avoid injury from burns. Shut off engine before removing fuel tank cap.

4

**WARNING**

**SERIOUS INJURY OR DEATH MAY RESULT FROM MACHINE ROLLOVER**

Failure to follow these instructions could result in serious injury or death

Do not operate machine on steep slopes and/or quick turns

Avoid sharp and/or quick turns

Do not exceed the machine weight rating of the ROPS

Always use seat belt

Do not jump if machine tips

If ROPS is foldable: Always keep ROPS fully extended

**WHEN ROPS MUST BE DOWN:**

Do not use the seat belt

Drive with extra care

If equipped with seat platform: Do not operate machine without seat platform pin in place

286304500

7

**61**

**VELOCITY PLUS**

5

**FORWARD**

**F**

**R**

**REVERSE**

481568

6

**Heavy-Duty Commercial**

481971

8

**WARNING**

**INSTALL BELT COVER BEFORE OPERATING MACHINE**

READ OPERATOR'S MANUAL

9

**WARNING**

The seat **MUST** be installed under the seat hold down bracket during installation. Failure to secure the seat under the hold down bracket could result in serious injury or death in a rollover.

10

**IMPORTANT**

Operation on slopes can be hazardous.

This machine was originally equipped with a Rollover Protection Device with a Roll Bar and Seat Belt.

See your dealer if either is missing or damaged.

483425

11

OFF ON START

**MOWER DECK**  
PULL OUT TO ENGAGE  
PUSH IN TO DISENGAGE

483762

12

**TURF Tiger**

CHOKE

SLOW FAST

482983

13

**WARNING**

Replace seat only with Scag approved seat with seat mounting provisions and Scag approved seat belts.

Failure to follow these directions could result in injury or death in the event of a rollover.

14

**SCAG**

POWERED EQUIPMENT

THIS MOWER INCLUDES A ROLL OVER PROTECTION SYSTEM THAT MUST BE INSTALLED PRIOR TO MOWER OPERATION.

15

**CUTTING HEIGHT**

5 1/2

4 3/4

4

3 1/4

2 1/2

1 3/4

**BOTTOM ROW OF HOLES**

482565

16

**CUTTING HEIGHT**

6

5 1/4

4 1/2

3 3/4

3

2 1/4

1 1/2

**TOP ROW OF HOLES**

482493

17

**START / DRIVE PROCEDURE**

- Engage parking brake
- Disengage mower deck drive
- Move control handles to neutral lock position
- Start engine
- Release parking brake
- Select forward or reverse with hydro control handles

**WARNING**

**AVOID SERIOUS INJURY OR DEATH**

- Read the Operator's Manual
- Operate only on slopes you can back up and never on slopes greater than 15 degrees
- Solicite etiquetas en español a un distribuidor Scag
- If machine stops going uphill, stop blades and back down slowly
- Avoid sudden turns
- Do not mow when children or others are around
- Never carry children even with blades off
- Look down and behind before and while backing
- Keep safety devices (guards, shields, switches, etc.) in place and working
- Remove objects that could be thrown by the blades
- Trained operators only

483444

18

## REPLACEMENT DECALS AND INFORMATION PLATES

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	483407	Decal, Danger-Spinning Blades	21	483405	Decal, Warning
2	483406	Decal, Warning-Rotating Blades	22	483229	Decal, Turf Tiger
3	483044	Decal, Patents	23	483727	Decal, Scag Logo
4	483397	Decal, Fuel Tank	24	48404	Decal, Metalcraft-Made In USA
5	483201	Decal, 61" Velocity Plus	25	483859	Decal, Scag Dual-Fuel
6	481568	Decal, Traction Control	26	483869	Decal, Stripes-RH
7	483300	Decal, ROPS Warning	27	483868	Decal, Stripes-LH
8	481971	Decal, Heavy Duty Commercial	28	483900	Decal, Warning Spark Arrestor
9	483402	Decal, Belt Cover	**	461982	Spanish Decal Kit, STT
10	483429	Decal, Warning Seat Hold Down			
11	483425	Decal, ROPS			
12	481669	Decal, Instrument Panel - Upper			
13	482983	Decal, Instrument Panel - Lower			
14	483633	Decal, Seat Replacement			
15	483158	Decal, ROPS			
16	482565	Decal, Cutting Height - Lower			
17	482493	Decal, Cutting Height - Upper			
18	483444	Decal, Start/Drive Procedure			
19	483154	Decal, Checks and Adjustments			
20	482577	Decal, Turf Tiger			

**IMPORTANT ADJUSTMENT PROCEDURES**  
 READ OPERATOR'S MANUAL FOR MORE DETAILS  
 Check tire pressure - (Drive tires-12 psi, Caster tires-25 psi)

**NEUTRAL ADJUSTMENT**  
 Loosen jam nuts  
 Rotate turnbuckle  
 With an operator in the seat, engine running, control levers in neutral and the parking brake disengaged - adjust control linkage. Loosen jam nuts. If wheel rotates forward, adjust turnbuckle CCW. If wheel rotates rearward, adjust turnbuckle CW. Adjust until drive wheel stops turning. Tighten jam nuts. Repeat for opposite side.

**TRACKING ADJUSTMENT**  
 If the machine pulls to the right, adjust LH control linkage CCW to slow left wheel. If the machine pulls to the left, adjust RH control linkage CCW to slow right wheel. Readjust neutral if necessary.

**FREE WHEEL OPERATION**  
 To move machine without running the engine, rotate both dump valves located at the LH side of the pumps CCW 1/2 turn to "freewheel" positions. Return dump valves to original position to operate the mower. Tighten to 7-10 Ft-Lbs.

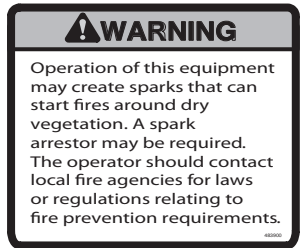
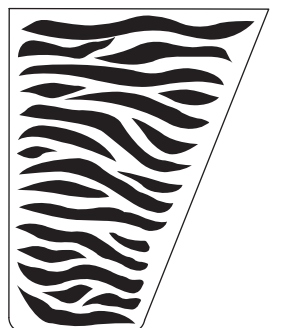
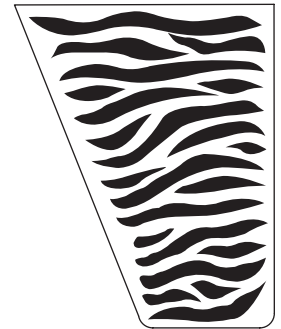
**HYDRAULIC FLUID LEVEL**  
 Check hydraulic fluid level while fluid is cool. Fluid level should be 5" below top of filler neck. FILL with SAE 20W50 motor oil only.

**IMPORTANT**  
 Do not overfill. Room for hot fluid expansion must be allowed or resulting expansion may cause leaks in the system.

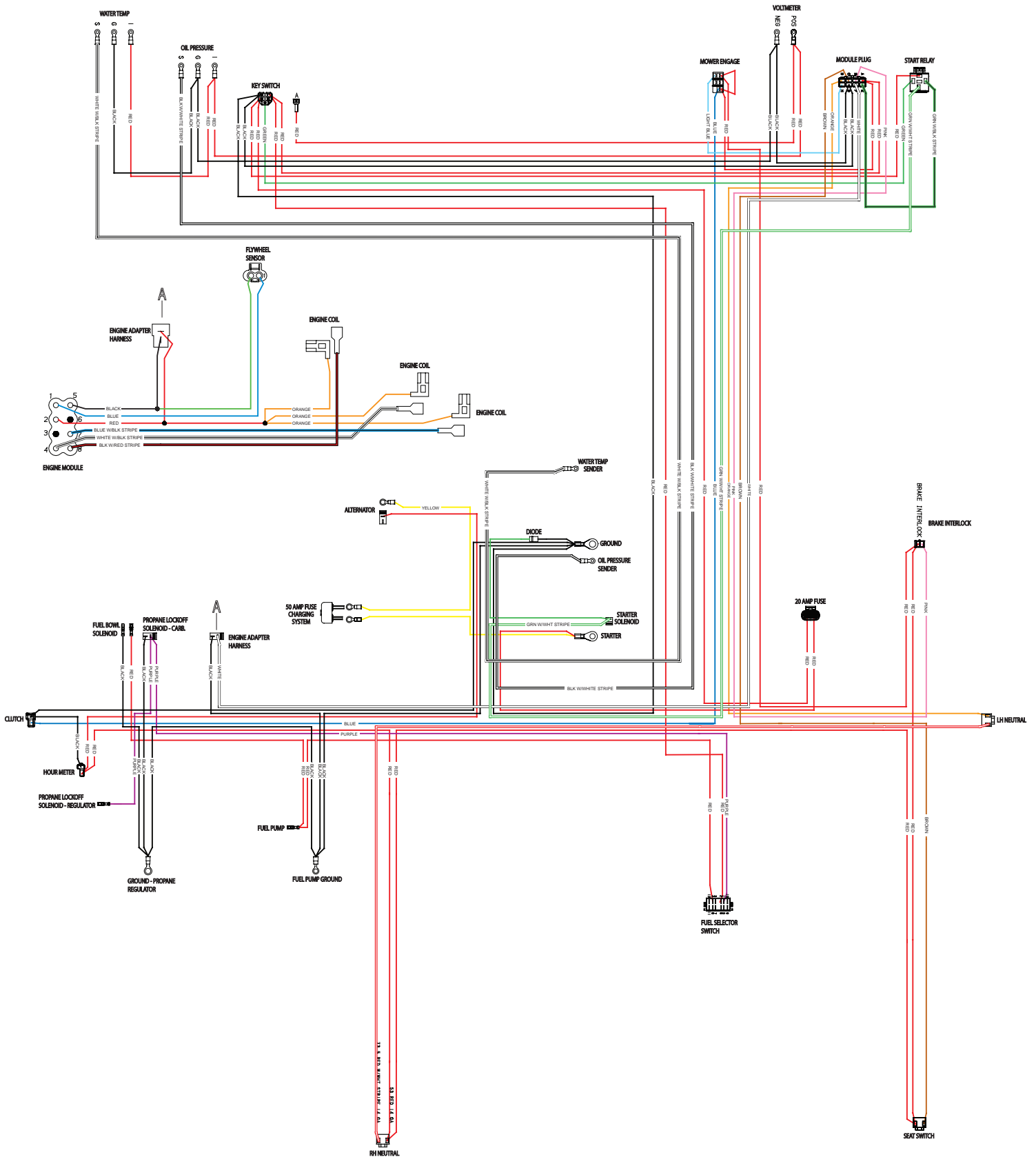
**IMPORTANT**  
 Gearbox Lubricant: SAE 80W90 gear oil

**IMPORTANT**  
 DRIVESHAFT MAINTENANCE  
 Grease yokes 3-4 pumps Every 200 hours  
 Grease spline 8-10 pumps Every 50 hours

483154



### ELECTRICAL SCHEMATIC - KUBOTA DUAL FUEL



# LIMITED WARRANTY - COMMERCIAL EQUIPMENT

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Any part of the Scag commercial mower manufactured by Scag Power Equipment and found, in the reasonable judgment of Scag, to be defective in materials or workmanship, will be repaired or replaced by an Authorized Scag Service Dealer without charge for parts and labor during the periods specified below. This warranty is limited to the original purchaser and is not transferable. Proof of purchase will be required by the dealer to substantiate any warranty claims. All warranty work must be performed by an Authorized Scag Service Dealer.

This warranty is limited to the following specified periods from the date of the original retail purchase for defects in materials or workmanship:

- Wear items including drive belts, blades, hydraulic hoses and tires are warranted for ninety (90) days.
- Batteries are covered for ninety (90) days.
- Frame and structural components including oil reservoir and oil coolers are warranted for 2 years (Parts and labor).
- Cutter decks are warranted against cracking for a period of three (3) years. (Parts and labor 1st and 2nd year; Parts only 3rd year.) The repair or replacement of the cutter deck will be at the option of Scag Power Equipment. We reserve the right to request components for evaluation. This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.
- Engines and electric starters are covered by the engine manufacturer's warranty period.
- Major drive system components are warranted for two (2) years by Scag Power Equipment. (Parts and labor) (Two year warranty exclude fittings, hoses, drive belts). The repair or replacement of the hydraulic pump or hydraulic motor will be at the option of Scag Power Equipment. This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.
- Electric clutches have a Limited Warranty for 2 year (Parts and labor).
- Spindle assemblies have a Limited Warranty for three years (Parts and labor 1st year and 2nd; Parts only 3rd year).
- Any Scag product used for rental purposes is covered by a 90 day warranty.

The Scag mower, including any defective part must be returned to an Authorized Scag Service Dealer within the warranty period. The expense of delivering the mower to the dealer for warranty work and the expense of returning it to the owner after repair will be paid for by the owner. Scag's responsibility is limited to making the required repairs and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any Scag mower.

**This warranty does not cover any mower that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the Operator's Manual.**

The warranty does not apply to any damage to the mower that is the result of improper maintenance, or to any mower or parts that have not been assembled or installed as specified in the Operator's Manual and Assembly Manual. The warranty does not cover any mower that has been altered or modified, changing performance or durability. In addition, the warranty does not extend to repairs made necessary by normal wear, or by the use of parts or accessories which, in the reasonable judgment of Scag, are either incompatible with the Scag mower or adversely affect its operation, performance or durability.

**Scag Power Equipment reserves the right to change or improve the design of any mower without assuming any obligation to modify any mower previously manufactured.** All other implied warranties are limited in duration to the two (2) year warranty period or ninety (90) days for mowers used for rental purpose. Accordingly, any such implied warranties including merchantability, fitness for a particular purpose, or otherwise, are disclaimed in their entirety after the expiration of the appropriate two year or ninety day warranty period. Scag's obligation under this warranty is strictly and exclusively limited to the repair or replacement of defective parts and Scag does not assume or authorize anyone to assume for them any other obligation. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Scag assumes no responsibility for incidental, consequential or other damages including, but not limited to, expense for gasoline, expense of delivering the mower to an Authorized Scag Service Dealer and expense of returning it to the owner, mechanic's travel time, telephone or telegram charges, rental of a like product during the time warranty repairs are being performed, travel, loss or damage to personal property, loss of revenue, loss of use of the mower, loss of time or inconvenience. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

